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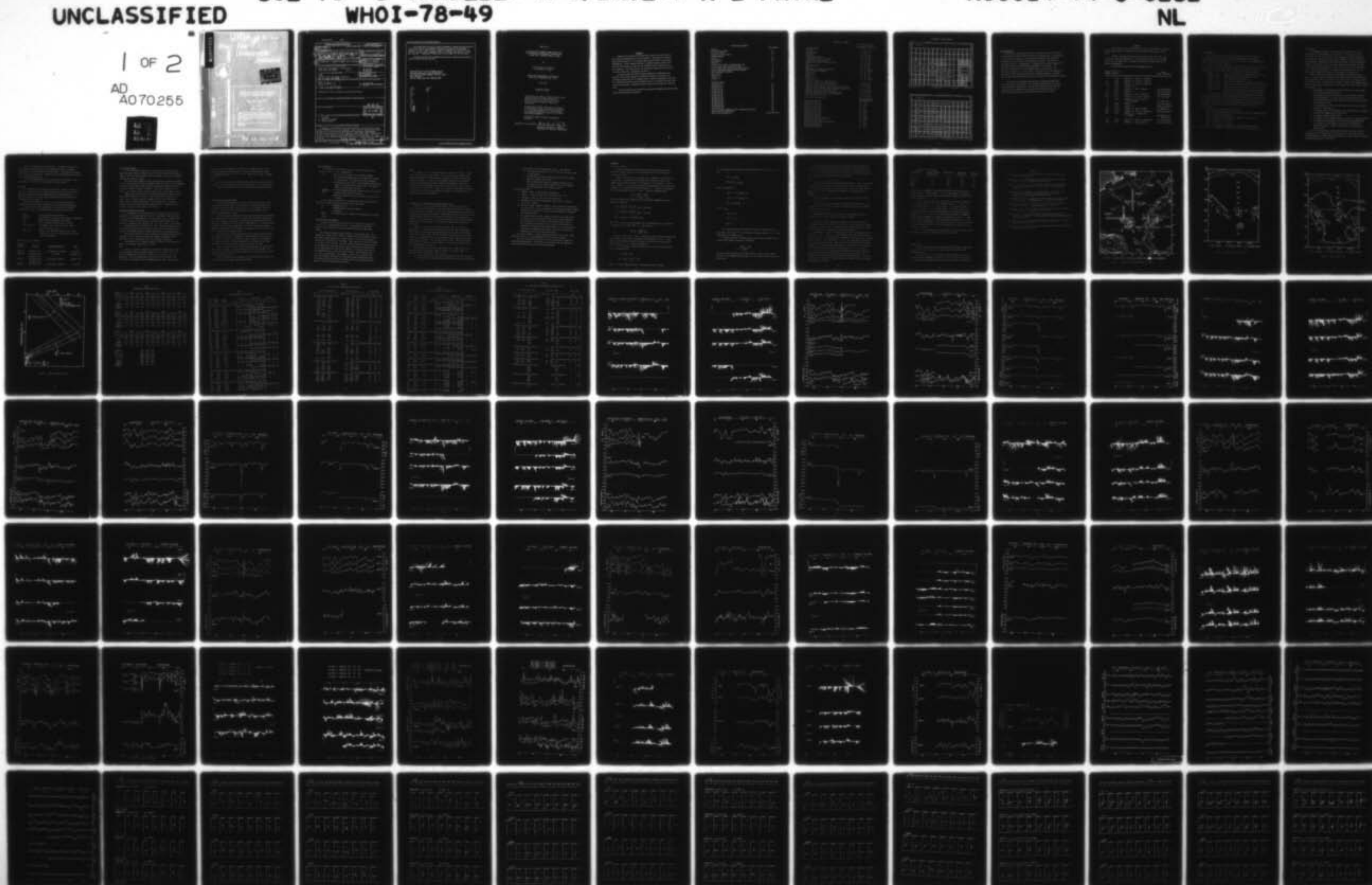

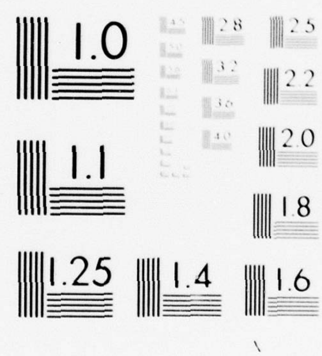

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by

Susan Tarbell, Ann Spe
Richard E. Payne

July 1978

TECHNICAL REPORT

Prepared for the Office of Nava

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Selected CTD data are presented as potential temperature and salinity values plotted against pressure.

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by

Susan Tarbell, Ann Spencer
and Richard E. Payne

WOODS HOLE OCEANOGRAPHIC INSTITUTION
Woods Hole, Massachusetts 02543

July 1978

TECHNICAL REPORT

Prepared for the Office of Naval Research under Contract N00014-74-C-0262, NR 083-004; N00014-76-C-0197, NR 083-400 and for the National Science Foundation under Grant OCE75-03962.

Approved for Distribution Valentine Worthington

Valentine Worthington, Chairman
Department of Physical Oceanography

ABSTRACT

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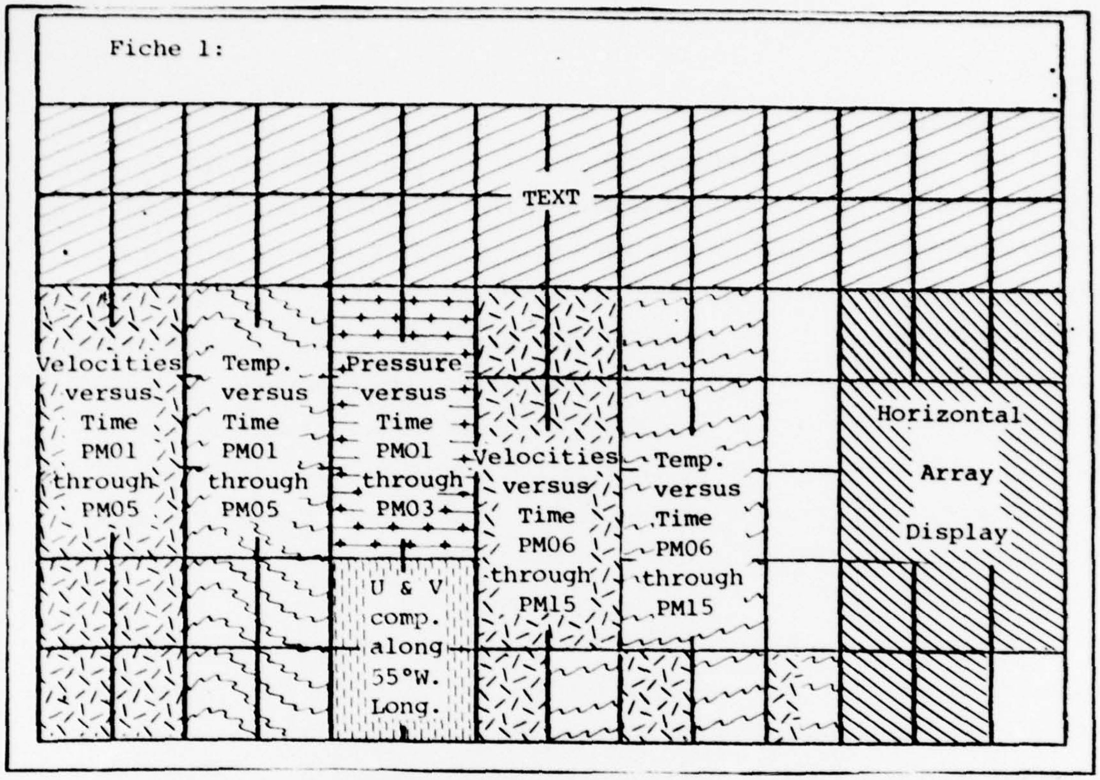
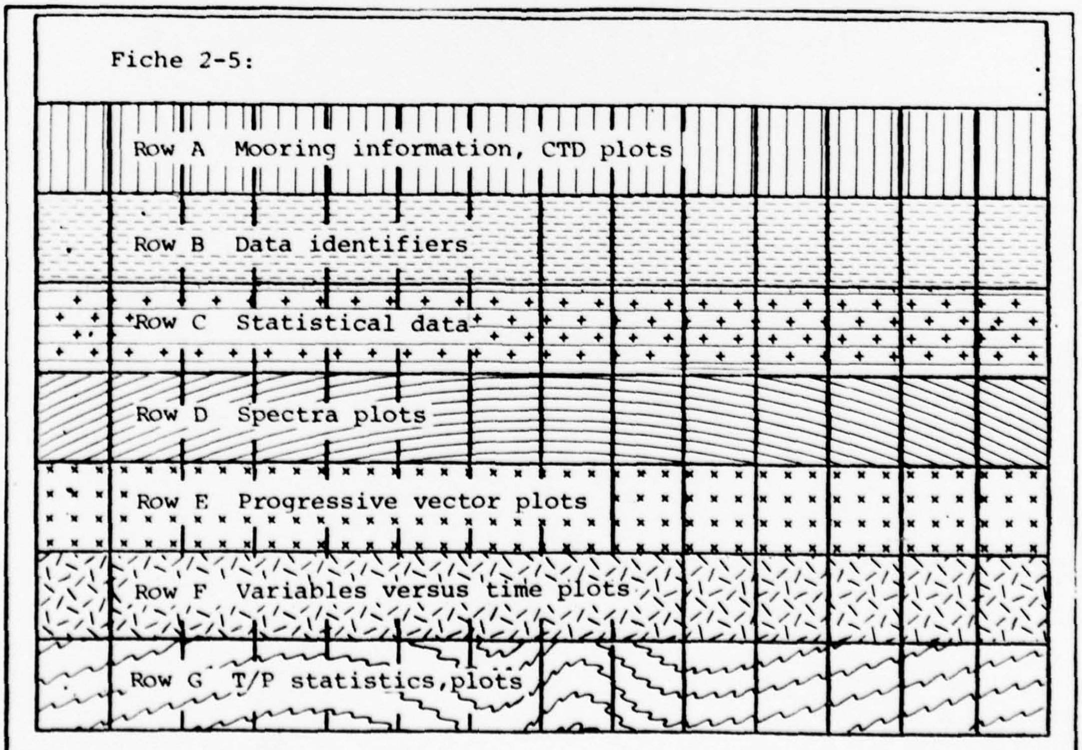
Printed Pages INDEX

Microfiche INDEX

Diagrams of fiche layout





Acknowledgments

Many people should share the credit for the excellent data return and the quality of data obtained during the POLYMODE Array II experiment, in particular the people in the buoy group instrument shop and those who worked on the moorings, both hardware and design. The officers and crews of the R. V. Knorr and R. V. Chain deserve special mention for their willing assistance in mooring deployment and recovery. The Principal Investigator for the POLYMODE Array II experiment is Dr. William J. Schmitz, Jr. The T/P data is courtesy of Dr. Carl Wunsch and the surface float tracks courtesy of Dr. Philip Richardson. CTD data were recorded and processed by the W.H.O.I. Physical Oceanography CTD Group.

The report was assembled with the help of Audrey Williams and data processors T. McKee and C. Mills and was reproduced at the M.I.T. Microreproduction Laboratory. The work was funded by Office of Naval Research Contract N00014-76-C-0262, NR 083-004; N00014-76-C-0197, NR 083-400 and National Science Foundation Grant IDO 75-03962.

PREFACE

This volume is the seventeenth in a series of Data Reports presenting moored current meter and associated data collected by the W.H.O.I. Buoy Group.

Volumes I through XVI present data from the years 1963-1971, and from several special experiments: the 1970 Pollard array, the 1973 IWEX array, the 1973 MODE array, the MODE Site moorings, and the Saint Croix mooring measurements.

Volume XVII presents data from POLYMODE Array II.

Volume Number	W.H.O.I. Ref. #		Notes year experiment
I	65-44	Webster, F., and N. P. Fofonoff	
II	66-60	Webster, F., and N. P. Fofonoff	
III	67-66	Webster, F., and N. P. Fofonoff	
IV	70-40	Pollard, R. T.	
V	71-50	Tarbell, S., and F. Webster	1966 measurements
VI	74-4	Tarbell, S.	1967 measurements
VII	74-52	Chausse, D., and S. Tarbell	1968 measurements
VIII	75-7	Pollard, R. T., and S. Tarbell	1970 Array data
IX	75-68	Tarbell, S., M. G. Briscoe, and D. Chausse	1973 IWEX Array
X	76-40	Tarbell, S.	1969a measurements
XI	76-41	Tarbell, S.	1969b measurements
XII	76-101	Chausse, D., and S. Tarbell	1973 MODE Array
XIII	77-18	Tarbell, S., and A. W. Whitlatch	1970 measurements
XIV	77-41	Tarbell, S., R. Payne and R. Walden	1976 Mooring 592 Saint Croix
XV	77-56	Tarbell, S., and A. W. Whitlatch	1971 measurements
XVI	78-5	Tarbell, S., and A. Spencer	1971-1975 MODE Site

Presentation

The entire report is presented on microfiche with the displays organized on the microfiche sheets by POLYMODE rather than W.H.O.I. mooring numbers as is usually our practice. W.H.O.I. vs. POLYMODE mooring numbers will be found in Table 1.

Except for the first two rows (A and B) in which the text is presented, microfiche sheet 1 displays composite plots of the data as an array. Rows three (C) through seven (G) are arranged by columns as follows:

Columns 1 and 2	Velocity stick plots for POLYMODE moorings 1,2,3,4,5
Columns 3 and 4	Temperature plots for moorings 1,2,3,4,5
Columns 5 and 6	Pressure plots for moorings 1,2,3
Columns 5 and 6	East and north components, composites down 55°W
Columns 7 and 8	Velocity stick plots for moorings 6,7,8,9-12,13,14,15
Columns 9 and 10	Temperature plots for moorings 6,7,8,9-12,13,14,15
Columns 12,13,14	Velocity vectors plotted in seven day subsampled spatial arrays for 600, 1000, 1500, 4000 m depths

In the other microfiche sheets, the data from individual instrument locations are presented. Since instruments were reset at the same positions as closely as possible each location is represented by three records, one from each setting of the array. Each column on the microfiche represents an instrument location and each row contains a single data display type. These include:

Row A	Mooring information and CTD plots
Row B	Data identification (in large letters to permit unaided reading)
Row C	Statistical presentation
Row D	Spectra plots (presented for complete 2 year records)
Row E	Progressive vector plots
Fow F	Variables vs. time plots
Row G	T/P statistics, variables vs. time, temperature spectra

See Table 2 for a summary of depths and duration of the presented data.

Introduction

The POLYMODE program is an international cooperative scientific investigation of the dynamics and statistics of the mesoscale motions in the sea, the energy sources of these motions, and their contribution to the general circulation of the ocean. POLYMODE includes theoretical investigations, experiments, and field observations. Of the field observations, the largest is the statistical geographic experiment designed to determine the distribution of energy levels and space and time scales of the eddy field throughout the western North Atlantic using current meter arrays, SOFAR float arrays, and hydrographic and XBT work.

Three current meter arrays were set whose locations are shown in Fig. 1. Array I was set to define the statistics of the mesoscale motions to the east and north of the MODE-I site (28°N, 70°W) and to resolve the time length scales. Building on the results of MODE-I and POLYMODE Array I, Array II, whose data is described in this report, had a more closely defined set of goals, i.e.:

1. To compare the distribution of eddy statistics at 4000 m depth with similar results along 70°W,
2. To examine the vertical structure of the eddy field for qualitative differences in and out of the recirculation region of the western eddy of the North Atlantic subtropical gyre suggested by Worthington (1976),
3. To investigate the horizontal heat advection and local temporal changes of temperature,
4. To estimate some of the Reynolds stress contributions to momentum and vorticity budgets for the mean flow,
5. To examine energy transfer terms,
6. To compare the data obtained with the results of numerical models,
7. To compare the distribution of mean velocities obtained with the structure of the general circulation as suggested by Worthington (1976). Some of these results are described in Schmitz (1977).

Array II consisted of three nine-month mooring settings at twelve locations (Fig. 2) between May 1975 and June 1977. The third setting included moorings at three additional locations to better resolve, spatially, the subtropical gyre's return flow.

Array III consisted of three clusters. Clusters A and B were on the western and eastern sides of the Mid-Atlantic Ridge to examine differences in the eddy field and the mean flow. The purpose of cluster C was to look at the baroclinic instability of the North Equatorial Current, as an eddy-generating device.

Data from POLYMODE Array II are described in this report. Data from Arrays I and III will be presented in future reports.

Moorings

The POLYMODE Array II mooring configuration is shown in Figure 2. Moorings 1 through 12 were in position from May 1975 to June 1977 with three consecutive settings of approximately nine months duration. Mooring positions 13, 14 and 15 were deployed on the third setting of the array only (See Table 1).

Moorings 1 through 8, 13, and 14, were intermediate moorings (Heinmiller, 1976), moorings 9 through 12 and 15 were bottom moorings.

A complete list of the components of each mooring is shown on microfiche, in Row A. The following abbreviations have been used:

VACM	Vector Averaging Current Meter
DT-VACM	A VACM which also measures differential temperature
850	Model 850 burst sampling current meter
T/P	M.I.T. temperature and pressure recorder
3/4";5/8";3/4"	For example; 3/4" line used on set 1 and 3, 5/8" line used on set 2
3/8" chain	Refers to the indicated length of 3/8" chain bolted to a 16" or 17" glass sphere in a hard hat (for flotation)

Array 2 was set as follows:

Ship & Cruise #	Mission	Chief Scientist(s)	Date
KNORR 49	Deployed Set 1	G. Tupper/Dr. W. Schmitz	May 1975
CHAIN 129	Recovered Set 1 Deployed Set 2	K. Bradley	December 1975
KNORR 60	Recovered Set 2 Deployed Set 3	K. Bradley/D. Simoneau	October 1976
KNORR 66	Recovered Set 3	K. Bradley/D. Simoneau	June 1977

Current Meter Types

The current meters described in this report were either Vector Averaging Current Meters (VACMs), built by American Machine and Foundry (AMF) or Model 850 current meters built by Geodyne, now a part of Egerton, Germeshausen and Grier (EG&G).

The VACM senses compass and vane information and computes a measure of east and north water current components each time a pair of rotor magnets passes the sensing diode, then sums these components through the entire recording interval, usually 15 minutes. There are 16 magnets on the rotor so one complete rotor revolution would cause eight compute cycles.

Temperature is derived from a voltage-to-frequency converter (v/f), whose output frequency is related to the thermistor resistance at its input. The v/f output pulses are summed over the entire recording interval thus averaging temperature. All variables are recorded on a cassette tape at the end of each recording interval. Temperatures are accurate to about $\pm.01°C$ (Payne et al., 1976).

Temperature/Pressure Recorder

An instrument to record temperature, pressure and time (T/P) was developed in the Draper Laboratory at M.I.T. for MODE-1 and used extensively on the post-MODE moorings. The instrument stores a sample every 15 seconds and records the sum of 64 successive data samples every 16 minutes on a magnetic tape cassette ($64 \times 15 = 960$ seconds = 16 minutes).

Temperatures have a resolution of .001°C (Wunsch and Dahlen, 1974). The absolute accuracy cannot be specified because the thermistors had not been calibrated since the original calibration by the manufacturer.

The pressure sensor is a strain gauge with a manufacturer specified accuracy of .03% of the scale range used (Wunsch and Dahlen, 1974). These sensors are recalibrated for each instrument deployment.

Occasionally the T/P sensors reached the limit of their measuring range. For instance, page/fiche no. 1-E-9.

CTD

A device to measure conductivity, temperature and pressure, manufactured by Neil Brown Instrument Systems, Inc. (N. Brown, 1975), was used at POLYMODE mooring sites to obtain vertical profiles of these quantities. Plots of temperature and salinity versus pressure, and θ-S plots are included for most POLYMODE mooring sites. The data were

collected on R. V. CHAIN cruise 129 and R. V. KNORR cruise 60. The plots are presented in Row A fiche 2-5 after the mooring page except for POLYMODE moorings 9, 10, 11, and 12 which are on fiche 5 columns 13 and 14.

Time

Time from T/Ps, 850s and VACMs was measured using a quartz crystal oscillator with a manufacturer's specified accuracy of ±1 second per day.

In this report time is read as year-month-day hour.minute.second.

Current Meter Data Processing

Bit strings from magnetic sea tapes for Model 850s (1/4" 2-track cartridges) and VACMs (1/8" 4-track cassettes) were transcribed onto 9-track computer compatible tape at W.H.O.I. The data were then converted to scientific units (decoded) and stored on magnetic tape in Maltais format (Maltais, 1969)

Editing the data included selecting start and stop times, adjusting the nominal depth of some records to agree with information supplied by the T/Ps, applying corrections to temperature indicated by post cruise thermistor calibrations, correcting the temperatures to a constant depth, computing vector averaged components for the data from burst sampled Model 850 instruments, and interpolating through gaps in the data caused by the removal of erroneous records.

The result is an evenly spaced time series which is used as input for the low pass filter, a symmetrical running Gaussian filter with a half width of 24 hours and a window of width 24 hours. The filtering is sequential and the resultant time series is 48 hours shorter than the input time series (the first and last 24 hours are lost).

There is usually a three or four day gap between data series from consecutive settings. On some composite plots the gap is shown. On others, such as spectra and spatial array plots, the gap has been filled with interpolated points.

Table 2 indicates which variables are presented, with reference to data identification number, duration and depth.

Data Identifiers

To insure that each data series has a unique identifier, the following scheme is used; 6081B1DG24A.

608	- The first three digits are the mooring number.
1	- The relative instrument position starting at the top of the mooring. One denotes the top instrument.
B	- The position of the letter in the alphabet indicates the amount of editing that has been done. The symbol $ means no editing has been done.
1DGau24 } 1DG24	- A 1-day subsampled Gaussian filtered series, the filter having a half width of 24 hours.
A	- Additional editing has been done after the series was filtered.

As the time series from the 3 settings have been merged together, additional naming parameters have been used; PM02,4000m.

PM	- POLYMODE Array II
02	- POLYMODE mooring position number 2.
,	- A separator.
4000 m or 4 km	- The nominal depth in meters for the merged data series.

Current meter data quality

Overall, the data return from the three settings was about 90%. A total of 133 current meters was set. One hundred had 100% data return, eight returned no data, and twenty-five had less than 100% return.

An unsolved problem affected several of these twenty-five. The symptom is a sudden drop in speed to threshold or near threshold followed by another sudden jump back to normal values. The low values usually persist for a few hours to a few days. Total data loss from this problem is 19 days in five records. In these periods speeds have been replaced by interpolated or averaged values. Much testing and speculating have not yet determined the cause of the problem. Occurrences are noted on the STATISTICS pages in the microfiche section. Other problems also are noted on these pages. For example, "sticky vane" indicates that the high frequency data may not be reliable during specified periods. For the most part this did not seriously affect the low-passed version. Where it did, the data have been deleted.

Depth

A summary of all instrument depths is presented in Table 2. Three depth designations have been used. First is a design or nominal depth, which was proposed for the experiment, and which is used in titles and composite displays. Second is an instrument depth which was computed after mooring deployment by buoy computer program NOYFB, and which is used on the mooring component pages and for records from current meters set deeper than 1500 meters. Third is a corrected depth, whose derivation is described in a separate paragraph, and which is used when data for individual records are presented.

POLYMODE Array 2 Temperature and Depth Corrections

Because of the occasional high currents seen by this array and the resulting depth variations of the moorings (up to hundreds of meters) it was desirable to attempt to correct to a constant depth the temperatures from both T/Ps and current meters. To make this correction it was necessary to know both the depth of an individual instrument and the temperature structure in the water above it. Pressures from T/Ps were used to compute depths for these instruments. Current meter depths were interpolated from them.

Figure 4 is a plot of temperature gradient $\frac{dT}{dp}$ vs. absolute temperature T. The data are from CTDs taken at the time of deployment and recovery of each mooring and represent stations from the full north-south extent of the array. The most northerly stations were in the Gulf Stream. It is apparent that one can represent quite simply the relationship between $\frac{dT}{dp}$ and T for the whole Array 2 area. The two straight lines on Fig. 4 represent a least squares fit of the data and were used in the temperature correction.

The following procedure was performed on the 1DGAU24 version of each instrument record with a depth of 1500 m or shallower ($\frac{dT}{dp}$ is negligible at greater depth). For each file:

1. Create PDIF for each T/P record by subtracting the most frequent pressure in the record from each pressure value in the time series.

2. Create PDIF for each current meter record. This may be:
    a. The same as the PDIF for a T/P if there is one quite near on the mooring.
    b. An average of the PDIFs from nearby T/Ps if the current meter is between two of them.
    c. For a current meter deep on a mooring which has T/Ps only near the top, PDIF is PDIF for one of the shallow T/Ps multiplied by an attenuation factor.

For each data point:

3. Compute dT/dp at the observed temperature.
4. Compute a corrected temperature using PDIF and dT/dp.
5. Determine dT/dp at the corrected temperature.
6. Recompute the corrected temperature using PDIF and the mean of the two dT/dps.

7a. For T/P records, compute a depth for each pressure by multiplying the pressure by a factor determined by converting the most frequent pressure of the record to a depth, using the method of Saunders and Fofonoff (1976).

7b. For current meter records, compute a depth for each data cycle by adding to the most frequent depth of the record (obtained by interpolation of T/P values on that mooring)the value of PDIF (including attenuation factor) used for correcting the temperature of that data cycle multiplied by a conversion factor obtained from Saunders and Fofonoff (1976) for the depth and geographical position of the current meter.

One of the results is a most frequent depth for each record. These depths are shown as a corrected depth for each record in Table 2.

The basic statistics and plots on the fiche pages show values for uncorrected temperature. The spectra (on the fiche) and the composite plots following the text use corrected temperature.

Programs

Statistics (STATS)

We have presented some different statistical parameters in this report to reflect changes in the techniques being used to analyze our current meter data.

Means of the east (u) and north (v) components of velocity are, to some extent, misleading since orienting the reference frame to the compass may not shed any light on the physics of the problem. In some cases, however, we can choose a reference frame which may have a particular meaning. If we rotate the reference frame by θ, then we can transform the fluctuating parts of the u and v velocity components into

$$u' = u\cos\theta + v\sin\theta$$
$$v' = -u\sin\theta + v\cos\theta.$$

The time average of the squares of the individual components and their product are given by

$$\overline{u'^2} = \frac{\overline{u^2} + \overline{v^2}}{2} + \frac{\overline{u^2} - \overline{v^2}}{2}\cos 2\theta + \overline{uv}\sin 2\theta$$

$$\overline{v'^2} = \frac{\overline{u^2} + \overline{v^2}}{2} - \frac{\overline{u^2} - \overline{v^2}}{2}\cos 2\theta + \overline{uv}\sin 2\theta$$

$$\overline{u'v'} = \overline{uv}\cos 2\theta - \left(\frac{\overline{u^2} - \overline{v^2}}{2}\right)\sin 2\theta.$$

Now $\overline{u'v'}$ is the correlation between the two components and, by choosing θ properly we can cause $\overline{u'v'} = 0$. This value is

$$\tan 2\theta_N = \frac{\overline{uv}}{\frac{1}{2}(\overline{u^2} - \overline{v^2})}.$$

At θ_N, then, the u and v motions are either totally uncorrelated in the mean, or they have a constant phase difference of 90°. If they have a constant phase difference then we can describe the motion of the velocity vector in u-v space as elliptical.

It is convenient to define two quantities invariant under rotations of the coordinate axes:

$$E = \frac{1}{2}(\overline{u^2} + \overline{v^2})$$

$$R^2 = (\overline{uv})^2 + \frac{1}{2}(\overline{u^2} - \overline{v^2})$$

where E is our normal definition of horizontal kinetic energy.

It is convenient and consistent with our definitions of R and θ_N to set

$$\overline{uv} = R \sin 2\theta_N$$

$$\frac{\overline{u^2} - \overline{v^2}}{2} = R \cos 2\theta_N$$

And, for arbitrary θ,

$$\overline{u'^2} = E + R \cos 2(\theta_N - \theta)$$

$$\overline{v'^2} = E - R \cos 2(\theta_N - \theta)$$

$$\overline{u'v'} = R \sin 2(\theta_N - \theta)$$

For $\theta = \theta_N$,

$$\overline{u'^2} = E + R$$

$$\overline{v'^2} = E - R$$

$$\overline{u'v'} = 0$$

If we view the path of the velocity vector as elliptical in u-v space then $\sqrt{\overline{u'^2}}$ and $\sqrt{\overline{v'^2}}$ are the major and minor axes and θ_n is the orientation of the major axis .

In order to know if it makes sense to talk about principal axes we need one more index, ellipticity, defined by

$$e = \frac{\sqrt{\overline{u'^2}} - \sqrt{\overline{v'^2}}}{\sqrt{\overline{u'^2}}}.$$

Ellipticity varies from 0 for circular motion, in which case it makes no sense to talk about principal axes, to 1 for motion strictly along the major axis.

This definition of ellipticity is for means over the full record length. For rotary quantities in most records it is more interesting to look at the variation of ellipticity with time. Dividing the record into pieces, computing the ellipticity for each piece and then averaging these ellipticities generally gives a larger mean.

Progressive Vector Diagram (PROVEC)

The progressive vector displacements are plotted. These are derived by multiplying the average speed in an interval by the interval length and joining the resulting vectors head-to-tail. The plot begins with an asterisk (*). All following month boundaries are indicated by the symbol $\diamond$.

Variable vs. Time Plot

This is a diagram of any variable plotted as a function of time.

Vector Stick Plots

The 24 hour averaged components are plotted as individual vectors along a time scale. Unless otherwise indicated, the vector orientation is such that east is up.

Sequential Array Plots

Subsampled filtered velocity vectors or temperature values are plotted to show a spatial array at a particular depth.

Spectra

The program TIMSAN (Time Series Analysis) uses the Fast Fourier Transform algorithm of Singleton (1969) and is restricted to data segments of length N points, where N must be an even number which has no prime factor larger than 5, and must be less than 8000 points.

The number of degrees of freedom for the first 40 plotted points is given by $\nu = a\,m\,s$ where m is the number of adjacent frequency bands being averaged, s is the number of independent data pieces being averaged, again as stated in the label, and a is 2 for temperature spectra and for Horizontal Kinetic Energy (HKE) spectra for which the EAST and NORTH components seem statistically independent. In the absence of information regarding NORTH-EAST correlation, one should use $a = 2$ to be safe.

The log-log plot is further averaged during plotting so that more and more points are averaged together as frequency increases. This eliminates the bunching together of points at high frequencies, increases the degrees of freedom of the high frequency estimates, and still permits low-frequency resolution.

Averaging is as follows:

Plotting Pts.	Frequency Bands Averaged Over	Data Points	Cumulative Data Points	Degrees Freedom
First 40	5	200	200	10
Next 15	10	150	350	20
Next 6	25	150	500	50
Next 6	50	300	800	100

In this way, for example, 750 data points would be plotted as only 66 points. The m in the formula $\nu = a\ m\ s$ for degrees of freedom is, in this example, 10 times larger at the highest frequencies than at the lowest frequencies.

For $\nu \geq 30$, the confidence limits for the spectral estimates are given approximately by $(1 - 2/9\nu \pm Z\sqrt{2/9\nu})^3$ where $Z = 1.28375$ for 80% confidence limits, $Z = 1.645$ for 90%, $Z = 1.96$ for 97% and $Z = 2.5757$ for 99%. In the example above, if the HKE spectral plot label had indicated 2 pieces and averaging over 8 adjacent frequency bands then $\nu = 2 \times 2 \times 8 = 32$ for the lowest frequencies (assuming NORTH and EAST components are highly correlated) and $200 \times 32 = 6400$ for the highest frequencies. The 95% confidence intervals (i.e., 95% of the time one would expect the spectral estimates to vary no more than this much) would be (0.57, 1.55) at low frequencies, and (0.97, 1.03) at high frequencies.

For $\nu \leq 30$, one must obtain confidence intervals from Chi-Squared distribution tables in standard statistical references.

Float Tracks

Free drifting buoys have been deployed several times in the North Atlantic since 1977 as part of a study of the Gulf Stream System (Richardson, 1977).

The buoys had a 200 m line-drogue and a temperature sensor, and were tracked by the Nimbus F satellite. The buoy tracks shown in Fig. 3 are a few of those measured during the time of the Array 2 experiment.

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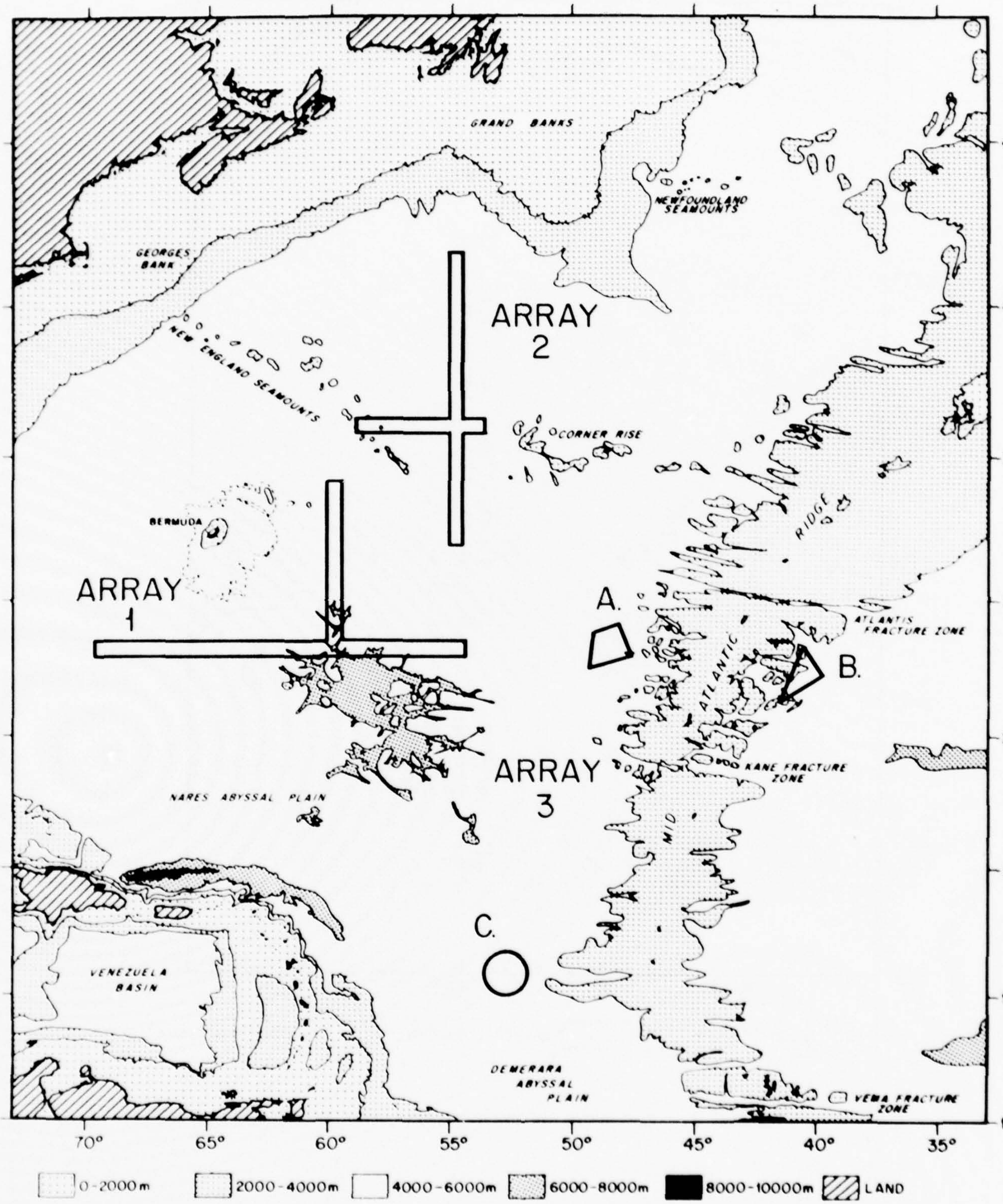


Figure 1. Location of POLYMODE Arrays 1, 2 and 3

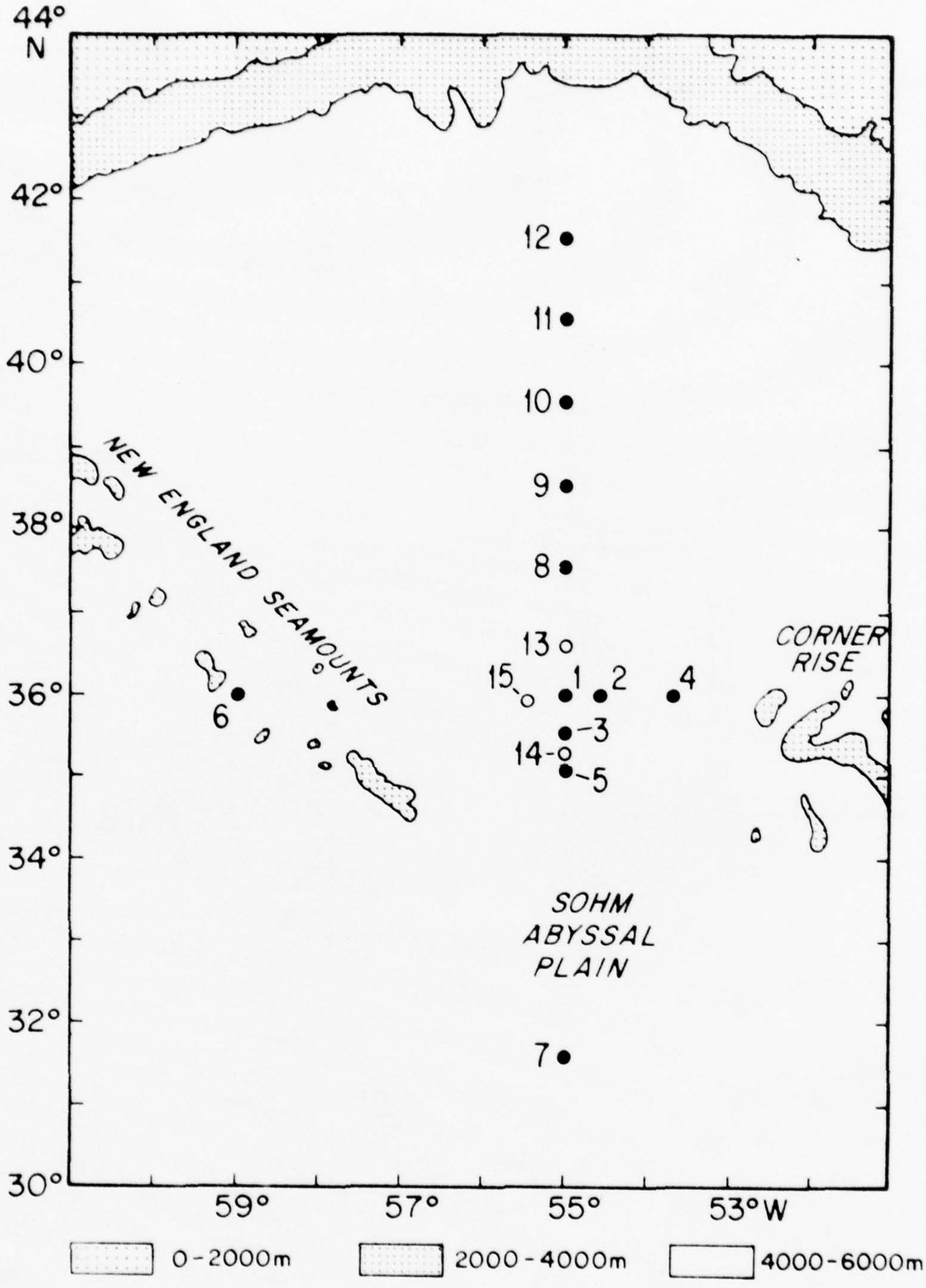


Figure 2. Location of moorings, Array 2

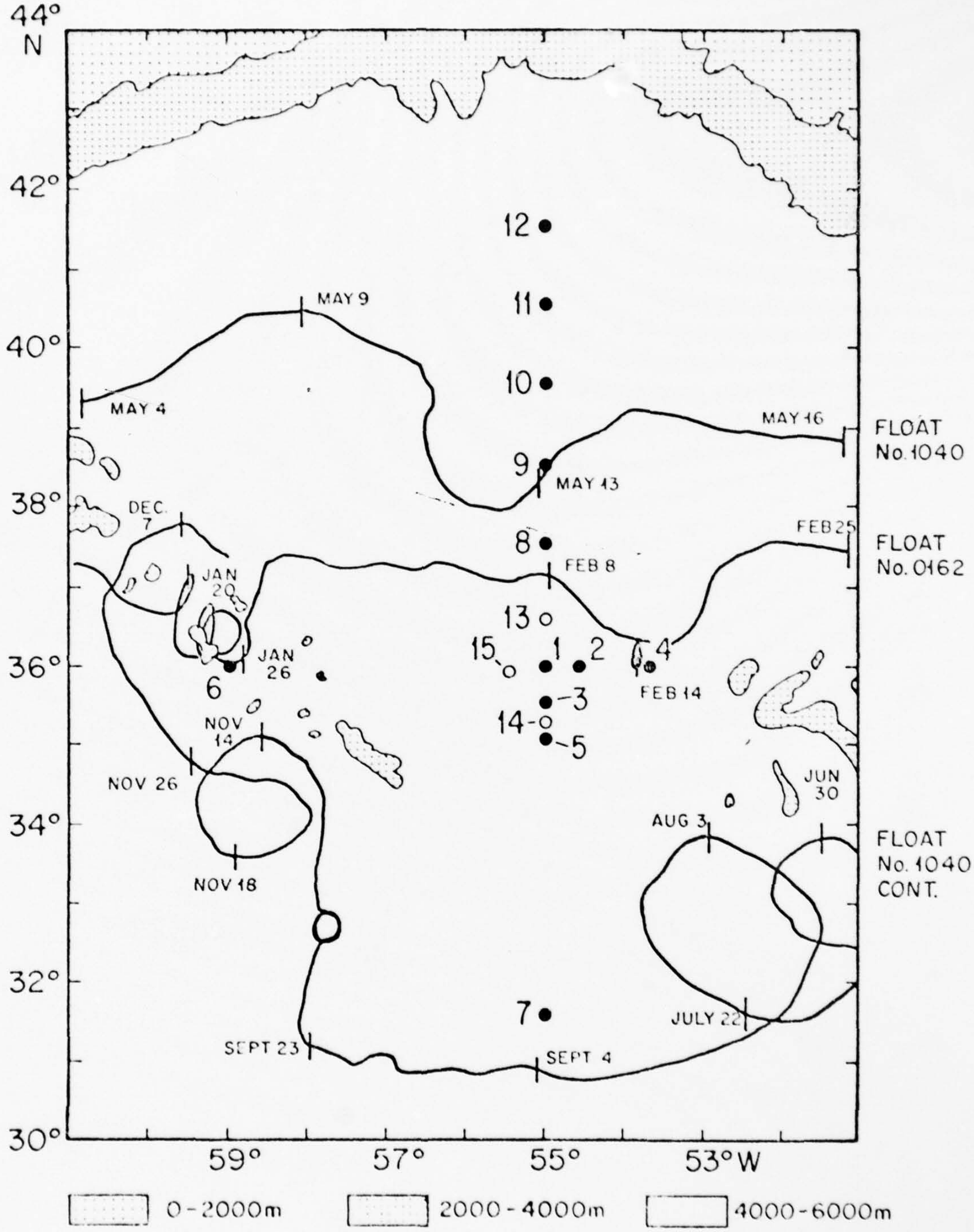


Figure 3. Float tracks, 1977

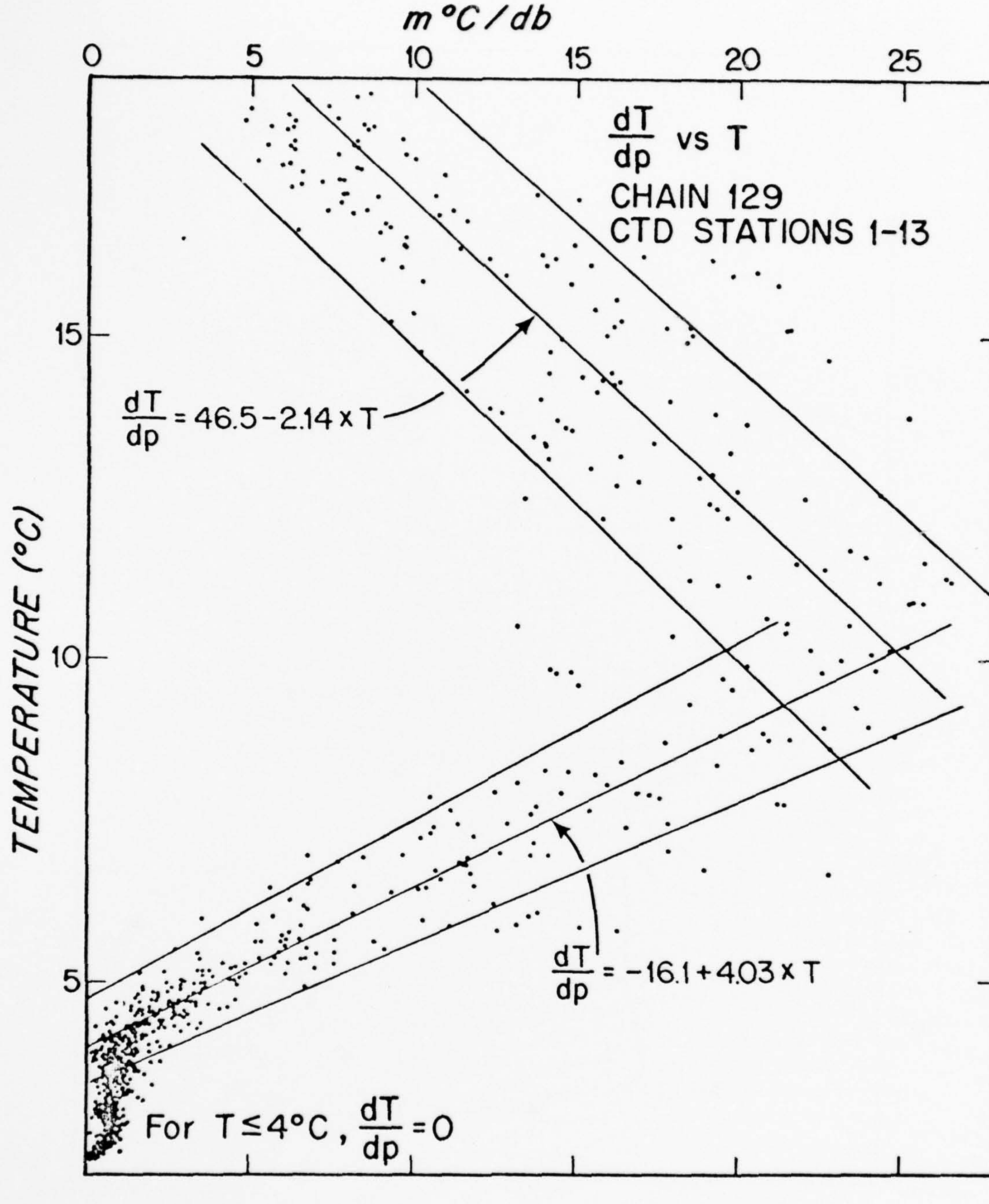


Figure 4. Depth correction curve

Table 1

MOORING NUMBERS, LOCATIONS AND DURATION

POLYMODE #	PM01			PM02			PM03			PM04		
W.H.O.I. #	557	583	608	558	579	600	565	582	609	559	578	601
LOCATION (°N)	35°56'	35°53'	35°53'	35°57'	35°56'	35°55'	35°36'	35°36'	35°36'	35°58'	35°58'	35°58'
(°W)	55°06'	55°03'	55°05'	54°41'	54°52'	54°44'	55°05'	55°05'	55°05'	53°46'	53°45'	53°47'
SET DATE	May 3 75	Dec 18 75	Oct 15 76	May 4 75	Dec 12 75	Oct 4 76	May 8 75	Dec 18 75	Oct 15 76	May 4 75	Dec 11 75	Oct 5 76
RETRIEVAL DATE	Dec 18 75	Oct 14 76	July 3 77	Dec 12 75	Oct 4 76	May 29 77	Dec 18 75	Oct 15 76	July 3 77	Dec 11 75	Oct 5 76	May 30 77
BOTTOM DEPTH (meters)	5089	5043	5054	5379	5338	5318	5162	5107	5115	5478	5463	5467

POLYMODE #	PM05			PM06			PM07			PM08		
W.H.O.I. #	566	581	611	568	584	598	567	580	612	564	577	606
LOCATION (°N)	34°53'	34°56'	34°56'	35°56'	35°57'	35°55'	31°36'	31°35'	31°35'	37°30'	37°29'	37°29'
(°W)	55°02'	55°05'	55°05'	59°02'	59°02'	59°02'	55°05'	54°56'	54°56'	55°00'	55°01'	55°00'
SET DATE	May 9 75	Dec 17 75	Oct 17 76	May 15 75	Dec 20 75	Oct 2 76	May 14 75	Dec 15 75	Oct 19 76	May 7 75	Dec 10 75	Oct 12 76
RETRIEVAL DATE	Dec 17 75	Oct 17 76	July 2 77	Dec 19 75	Oct 2 76	May 28 77	Dec 15 75	Oct 19 76	June 21 77	Dec 10 75	Oct 12 76	July 5 77
BOTTOM DEPTH (meters)	5515	5502	5506	5205	5202	5206	5296	5587	5595	5350	5310	5334

POLYMODE #	PM09			PM10			PM11			PM12		
W.H.O.I. #	563	576	605	562	575	604	561	574	603	560	573	602
LOCATION (°N)	38°30'	38°30'	38°29'	39°27'	39°30'	39°29'	40°28'	40°27'	40°27'	41°29'	41°29'	41°29'
(°W)	54°58'	54°55'	54°56'	54°59'	55°00'	55°01'	55°00'	55°03'	55°03'	55°00'	54°59'	54°58'
SET DATE	May 7 75	Dec 9 75	Oct 11 76	May 7 75	Dec 8 75	Oct 10 76	May 6 75	Dec 8 75	Oct 9 76	May 6 75	Dec 7 75	Oct 8 76
RETRIEVAL DATE	Dec 9 75	Oct 10 76	July 5 77	Dec 8 75	Oct 10 76	July 7 77	Dec 8 75	Oct 9 76	July 8 77	Dec 6 75	Oct 7 76	July 9 77
BOTTOM DEPTH (meters)	5353	5340	5340	5279	5264	5266	5171	5177	5173	4774	4758	4772

POLYMODE #	PM13	PM14	PM15
W.H.O.I. #	607	610	599
LOCATION (°N)	36°30'	35°15'	35°57'
(°W)	55°00'	55°00'	55°28'
SET DATE	Oct 13 76	Oct 16 76	Oct 3 76
RETRIEVAL DATE	July 4 77	July 3 77	May 29 77
BOTTOM DEPTH (meters)	5445	5487	5457

Table 2

a. Data Variables, Moorings 1-5

Inst. Type	Nominal Depth (m.)	Data Ident. no.	Velocities set 1 2 3	Temperature 1 2 3	Pressure 1 2 3
*POLYMODE mooring position #1 W.H.O.I. moorings #557, #583, #608					
CM	600	1;1;1			
T/P	800	2;2;2			
CM	1000	3;3;3			
T/P	1200	4;4;4			
CM	1500	5;5;5			
T/P	2000	6;6;6			
T/P	2500	7;7;7			
T/P	3000	8;8;8			
T/P	3500	9;9;9			
CM	4000	10;10;10			
T/P	4500	11;11;11			
T/P	5000	12;12;			
CM	5000	; ;12			
*POLYMODE mooring position #2 W.H.O.I. Moorings #558, #579, #600					
CM	600	1;1;1			
Incl	800	2; ;			
T/P	800	3;2;2			
CM	1000	4;3;3			
CM	1500	5;4;4			
Incl	1500	6; ;			
Incl	3000	7; ;			
T/P	3000	8;5;5			
CM	4000	9;6;6			
Incl	4000	10; ;			
T/P	5000	11;7;7			
*POLYMODE mooring position #3 W.H.O.I. Moorings #565, #582, #609					
CM	600	1;1;1			
T/P	800	2;2;2			
CM	1000	3;3;3			
CM	1500	4;4;4			
T/P	3000	5;5;5			
CM	4000	6;6;6			
IES	5000	; ;7			
CM	5000	; ;8			
T/P	5000	7;7;9			
*POLYMODE mooring position #4 W.H.O.I. Moorings #559, #578, #601					
CM	600	1;1;1			
T/P	800	2;2;2			
CM	1000	3;3;3			
CM	1500	4;4;4			
CM	4000	5;5;5			
*POLYMODE mooring position #5 W.H.O.I. Moorings #566, #581, #611					
CM	600	1;1;1			
T/P	800	2;2;2			
CM	1000	3;3;3			
CM	1500	4;4;4			
CM	4000	5;5;5			

Table 2

b. Data Duration and Depths, Moorings 1-5

Corrected Depths (m)			# of Data Days			Data Ident. No.		
Set 1	2	3	Set 1	2	3			
*POLYMODE mooring position #1				W.H.O.I. Moorings		#557,	#583,	#608
603	614	595	224	74	259	1;	1;	1
802	815	795	224	298	260	2;	2;	2
1004	1017	1001	224	180	259	3;	3;	3
1204	1219		224	298	0	4;	4;	4
1503	1501	1503	226	298	259	5;	5;	5
2002	2006	2003	53	291	260	6;	6;	6
2505		2501	224	0	260	7;	7;	7
3001	3011		224	298	0	8;	8;	8
3501		3500	225	0	260	9;	9;	9
4001	4001		224	298	0	10;	10;	10
4495	4506	4502	224	298	260	11;	11;	11
	5011		0	298	-	12;	12;	
		5003	-	-	259	;	;	12
*POLYMODE mooring position #2				W.H.O.I. Moorings		#558,	#579,	#600
	563	596	0	292	235	1;	1;	1
						2;	;	
781	758	796	213	215	235	3;	2;	2
982	966	996	215	294	235	4;	3;	3
1482	1468	1498	215	294	235	5;	4;	4
						6;	;	
						7;	;	
2992	2959	3001	219	294	235	8;	5;	5
3977	3955	4002	218	294	235	9;	6;	6
						10;	;	
4964	4944	5006	218	294	235	11;	7;	7
*POLYMODE mooring position #3				W.H.O.I. Moorings		#565,	#582,	#609
640	698	720	219	300	257	1;	1;	1
840			219	0	0	2;	2;	2
1040		1120	219	0	257	3;	3;	3
1540	1605	1620	219	284	257	4;	4;	4
3035	3108	3117	220	300	258	5;	5;	5
4030	4106	4000	219	300	257	6;	6;	6
						;	;	7
		5128	-	-	255	;	;	8
5021	5095	5129	219	300	258	7;	7;	9
*POLYMODE mooring position #4				W.H.O.I. Moorings		#559,	#578,	#601
601	588	603	217	246	234	1;	1;	1
802	790		217	246	0	2;	2;	2
	991	1003	0	246	234	3;	3;	3
1501	1494	1503	217	246	214/234	4;	4;	4
4001	3996	4003	177	246	234	5;	5;	5
*POLYMODE mooring position #5				W.H.O.I. Moorings		#566,	#581,	#611
606	633	596	219	301	204	1;	1;	1
807	835	796	219	301	204	2;	2;	2
1006	1036	996	219	301	204	3;	3;	3
1506	1540	1498	219	71/301	204	4;	4;	4
4006	4041		219	301	0	5;	5;	5

Table 2

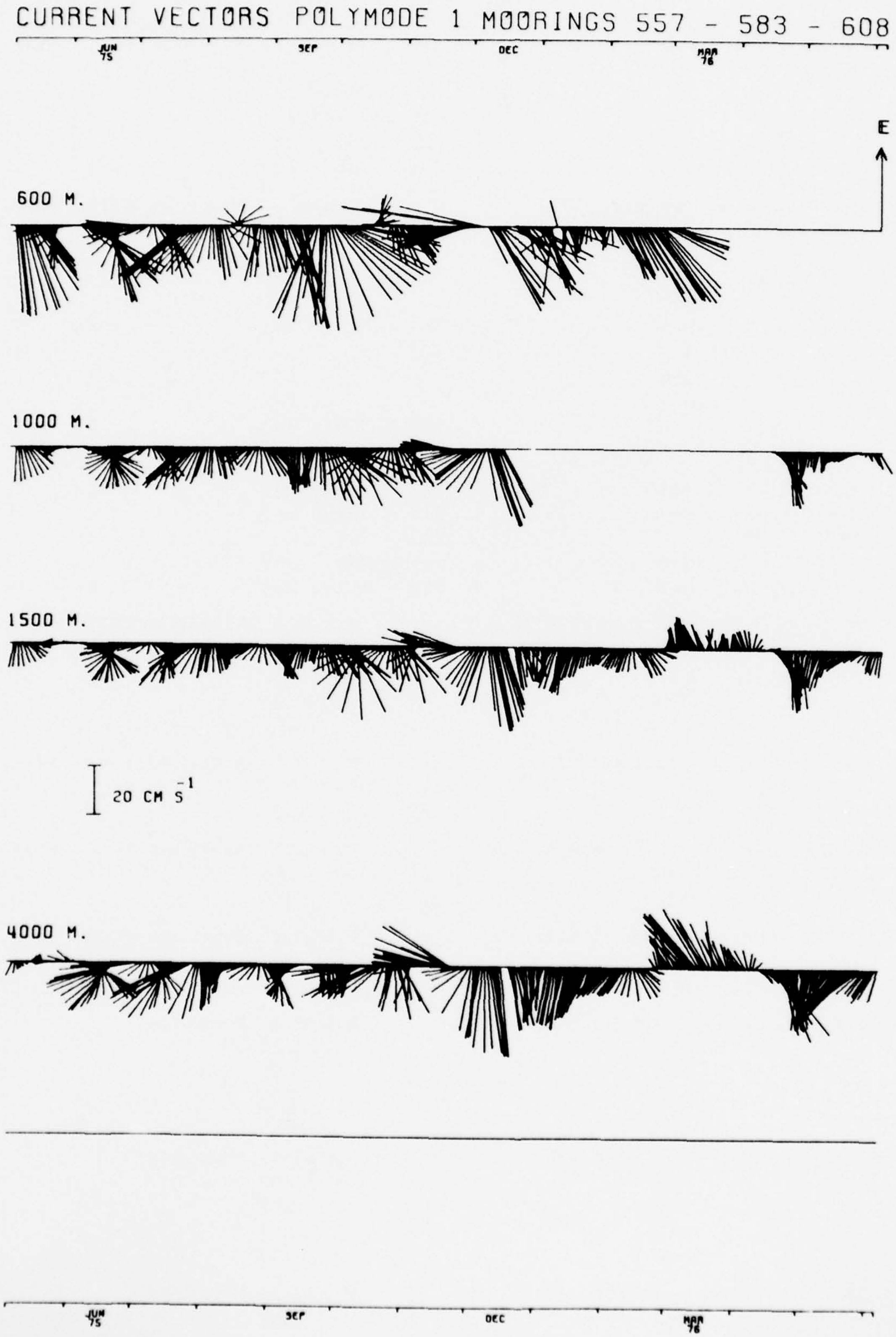
c. Data Variables, Moorings 6-15

Inst. Type	Nominal Depth (m.)	Data Ident. no.	Velocities [+ +] Set 1 2 3	Temperature [+ +] / 1 2 3	Pressure [+ +] / 1 2 3
*POLYMODE mooring position #6			W.H.O.I. moorings #568, #584, #598		
CM	600	1;1;1			
T/P	800	2;2;2			
CM	1000	3;3;3			
CM	1500	4;4;4			
CM	4000	5;5;5			
*POLYMODE mooring position #7			W.H.O.I. moorings #567, #580, #612		
CM	600	1;1;1			
CM	800	; ;2			
T/P	800	2;2;3			
CM	950	; ;4			
CM	1000	3;3;5			
CM	1500	4;4;6			
CM	2000	; ;7			
CM	2500	; ;8			
CM	4000	5;5;9			
*POLYMODE mooring position #8			W.H.O.I. moorings #564, #577, #606		
CM	600	1;1;3			
T/P	800	2;2;2			
CM	1000	3;3;			
CM	1500	4;4;4			
CM	4000	5;5;5			
*POLYMODE mooring position #9			W.H.O.I. moorings #563, #576, #605		
CM	4000	1;1;1			
T/P	4000	2;2;2			
CM	5250	; ;3			
T/P	5250	; ;4			
*POLYMODE mooring position #10			W.H.O.I. moorings #562, #575, #604		
CM	4000	1;1;1			
T/P	4200	2;2;2			
*POLYMODE mooring position #11			W.H.O.I. moorings #561, #574, #603		
CM	4000	1;1;1			
T/P	4200	2;2;2			
*POLYMODE mooring position #12			W.H.O.I. moorings #560, #573, #602		
CM	4000	2;1;1			
T/P	4000	1;2;2			
*POLYMODE mooring position #13			W.H.O.I. moorings #607		
CM	600	; ;1			
CM	1000	; ;2			
CM	1500	; ;3			
CM	4000	; ;4			
*POLYMODE mooring position #14			W.H.O.I. moorings #610		
CM	600	; ;1			
CM	1000	; ;2			
CM	1500	; ;3			
CM	4000	; ;4			
*POLYMODE mooring position #15			W.H.O.I. moorings #599		
CM	4000	; ;1			

Table 2

d. Data Duration and Depths, Moorings 6-15

Corrected Depths (m) Set 1	2	3	# of Data Days Set 1	2	3	Data Ident. No.		
*POLYMODE mooring position #6				W.H.O.I. Moorings		#568,	#584,	#598
612		600	215	0	69	1;	1;	1
813	814		215	286	0	2;	2;	2
1013	1015	1000	215	286/198	235	3;	3;	3
1512	1518	1500	215	286	235	4;	4;	4
4007	4019	4000	83	286	235	5;	5;	5
*POLYMODE mooring position #7				W.H.O.I. Moorings		#567,	#580,	#612
631	587	-	213	167	0	1;	1;	1
		763			243	;	;	2
831	802	763	213	266	243	2;	2;	3
		913			243	;	;	4
1031	990	965	213	306	243	3;	3;	5
1531	1494	1470	37+120	304	243	4;	4;	6
		1976			243	;	;	7
		2483			243	;	;	8
4031	3995	4003	213	306	243	5;	5;	9
*POLYMODE mooring position #8				W.H.O.I. Moorings		#564,	#577,	#606
627	583	585	212	304	263	1;	1;	3
826	785	385	212	304	263	2;	2;	2
1026	986		212	304		3;	3;	
1525	1490	1250	212	304	263	4;	4;	4
4014	3990	4013	212	304	263	5;	5;	5
*POLYMODE mooring position #9				W.H.O.I. Moorings		#563,	#576,	#605
3990	3991	4035	212	304	265	1;	1;	1
3991	3992	4044	212	304	166	2;	2;	2
		5246			265	;	;	3
		5247			265	;	;	4
*POLYMODE mooring position #10				W.H.O.I. Moorings		#562,	#575,	#604
3973	3990	4017	212	304	267	1;	1;	1
4173	4190	4217	212	304	268	2;	2;	2
*POLYMODE mooring position #11				W.H.O.I. Moorings		#561,	#574,	#603
3970	3985	4039	211	303	269	1;	1;	1
4169	4185	4239	211	303	270	2;	2;	2
*POLYMODE mooring position #12				W.H.O.I. Moorings		#560,	#573,	#602
3948	3995	3982	211	302	272	2;	1;	1
3946	3996	3983	211	303	272	1;	2;	2
*POLYMODE mooring position #13				W.H.O.I. Moorings				#607
		654			123/261	;	;	1
		1054			261	;	;	2
		1553			261	;	;	3
		4049			261	;	;	4
*POLYMODE mooring position #14				W.H.O.I. Moorings				#610
		596			257	;	;	1
		999			257	;	;	2
		1498			257	;	;	3
		3998			257	;	;	4
*POLYMODE mooring position #15				W.H.O.I. Moorings				#599
		3997			235	;	;	1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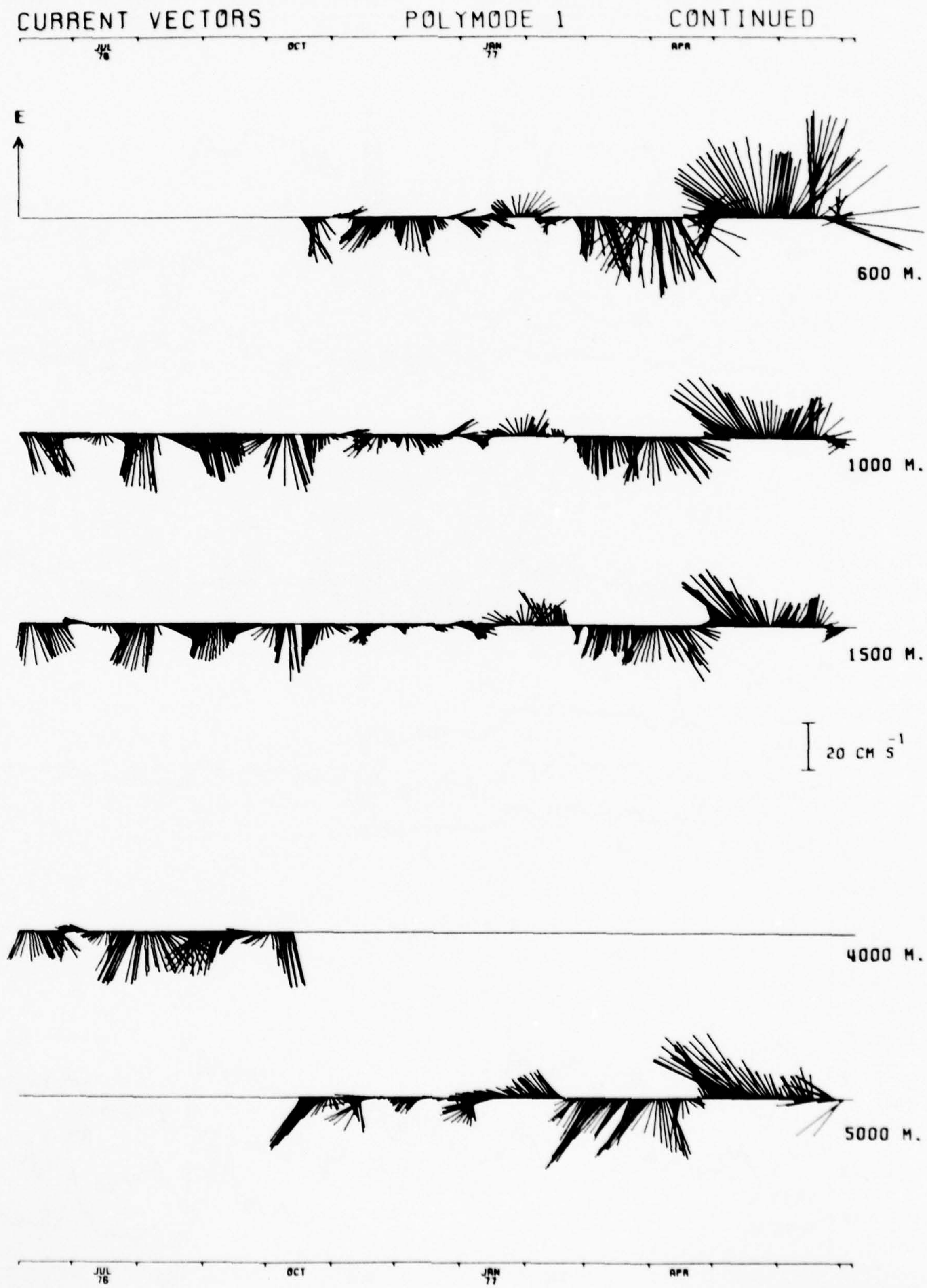
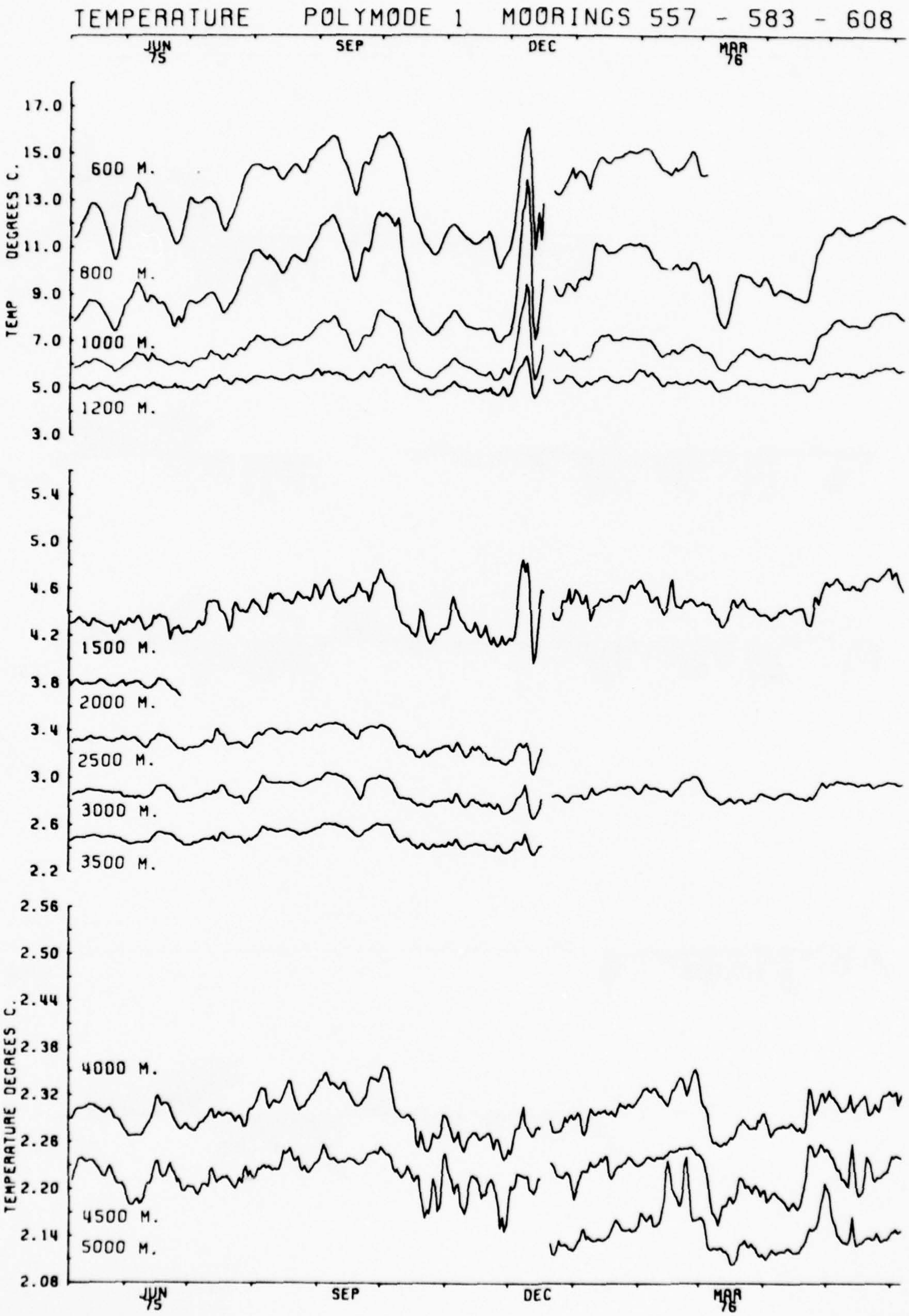
JUN 75
SEP
DEC
MAR 76
E
600 M.
1000 M.
1500 M.
20 CM S^{-1}
4000 M.
JUN 75
SEP
DEC
MAR 76



CURRENT VECTORS
POLYMODE 1
CONTINUED
JUL 76
OCT
JAN 77
APR
E
600 M.
1000 M.
1500 M.
20 CM S^{-1}
4000 M.
5000 M.
JUL 76
OCT
JAN 77
APR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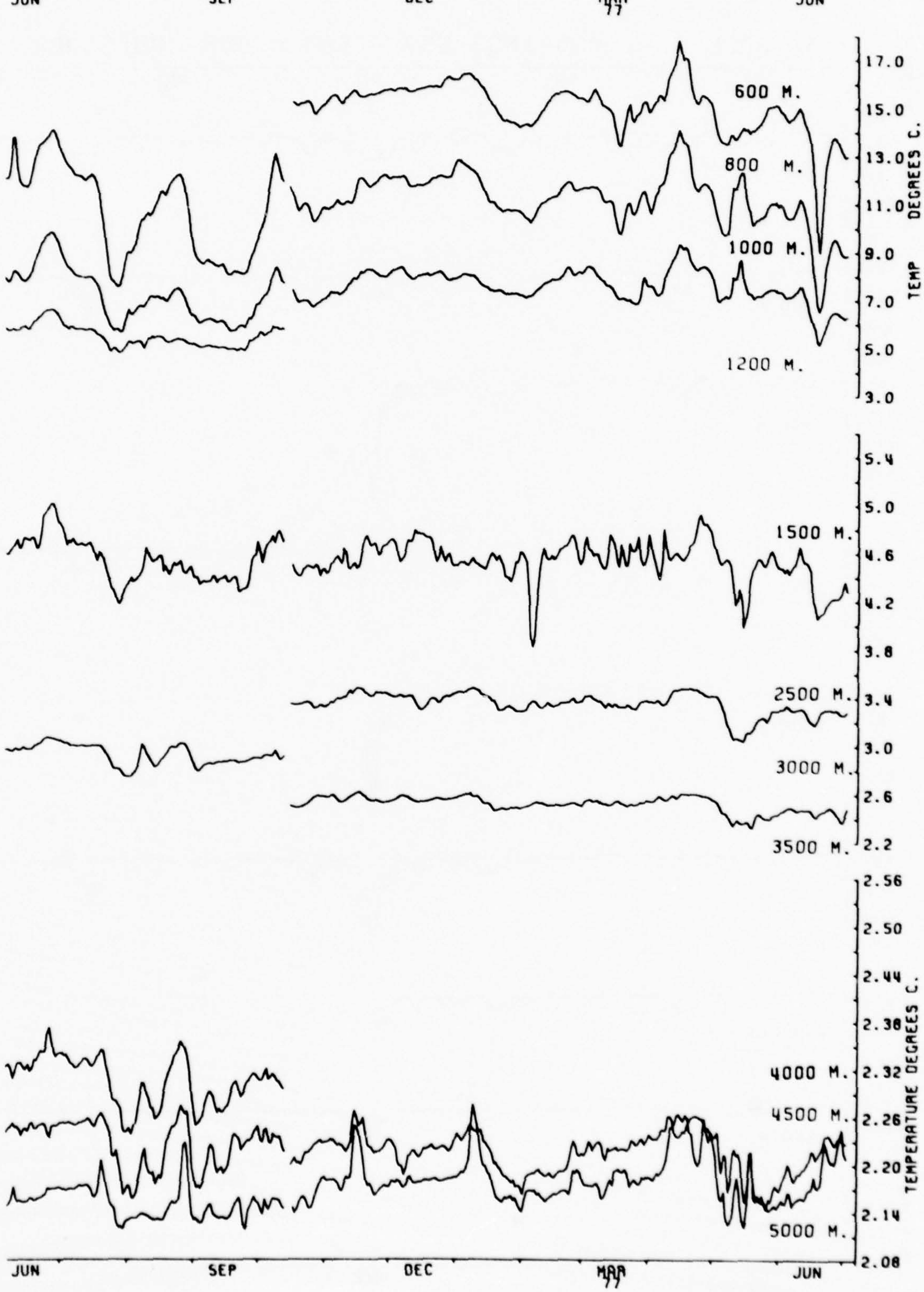
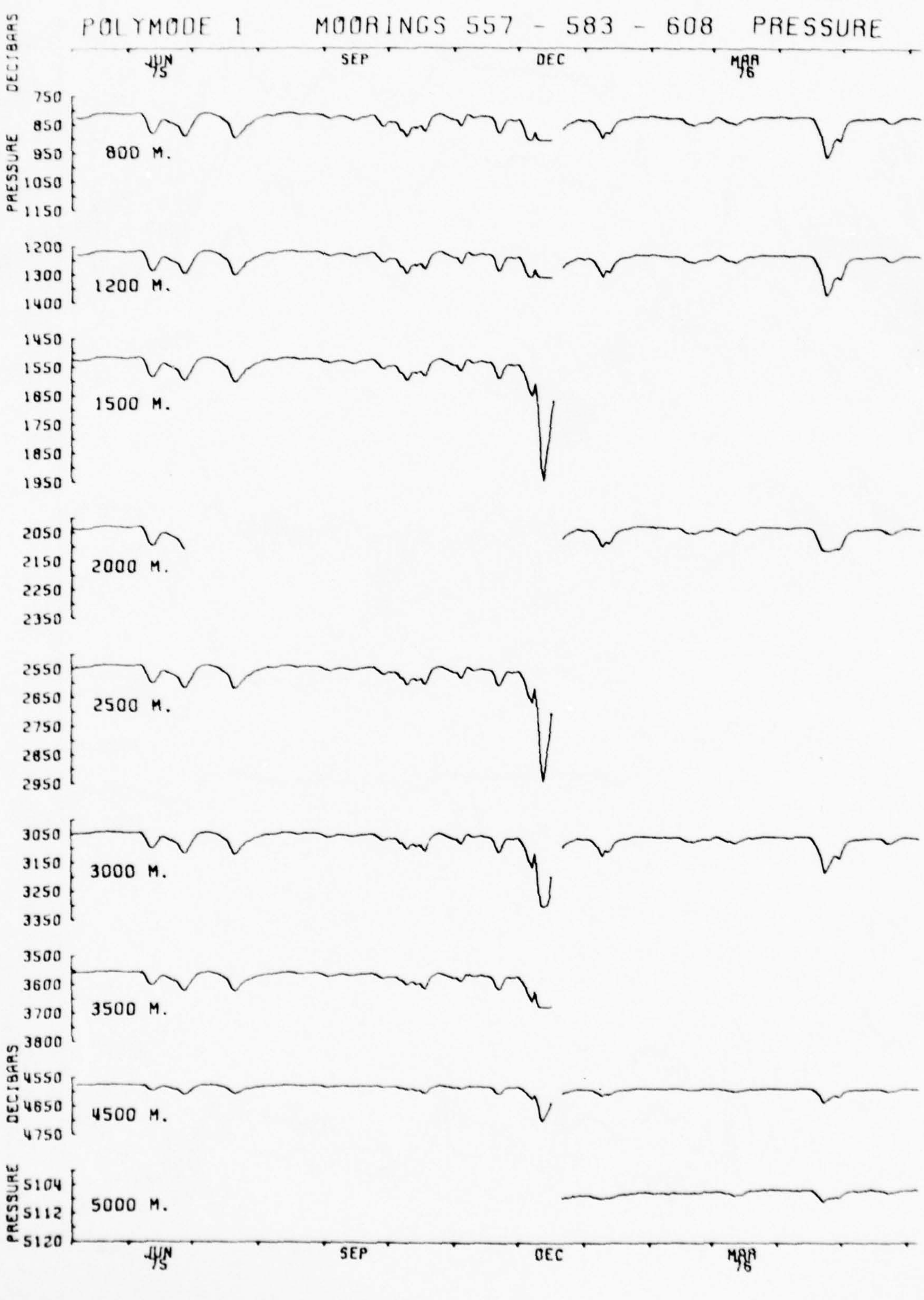
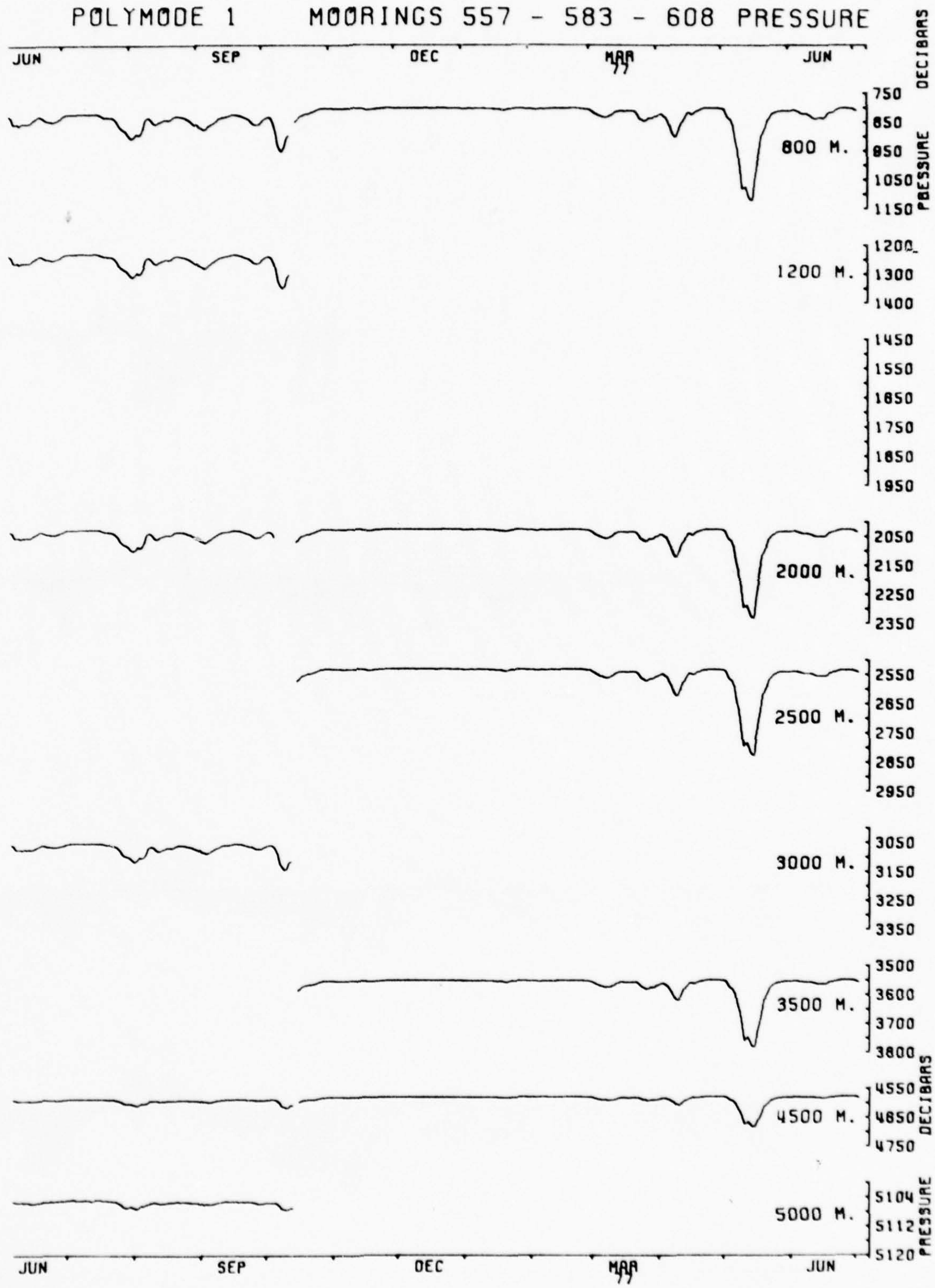
JUN 75
SEP
DEC
MAR 76
TEMP DEGREES C.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
800 M.
1000 M.
1200 M.
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
1500 M.
2000 M.
2500 M.
3000 M.
3500 M.
TEMPERATURE DEGREES C.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
4000 M.
4500 M.
5000 M.

TEMPERATURE POLYMODE 1 CONTINUED




POLYMODE 1 MOORINGS 557 - 583 - 608 PRESSURE
JUN 75
SEP
DEC
MAR 76
PRESSURE DECIBARS
750
850
950
1050
1150
800 M.
1200
1300
1400
1200 M.
1450
1550
1650
1750
1850
1950
1500 M.
2050
2150
2250
2350
2000 M.
2550
2650
2750
2850
2950
2500 M.
3050
3150
3250
3350
3000 M.
3500
3600
3700
3800
3500 M.
DECIBARS
4550
4650
4750
4500 M.
PRESSURE
5104
5112
5120
5000 M.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JUN
SEP
DEC
MAR 77
JUN
800 M.
1200 M.
2000 M.
2500 M.
3000 M.
3500 M.
4500 M.
5000 M.
750
850
950
1050
1150
1200
1300
1400
1450
1550
1650
1750
1850
1950
2050
2150
2250
2350
2550
2650
2750
2850
2950
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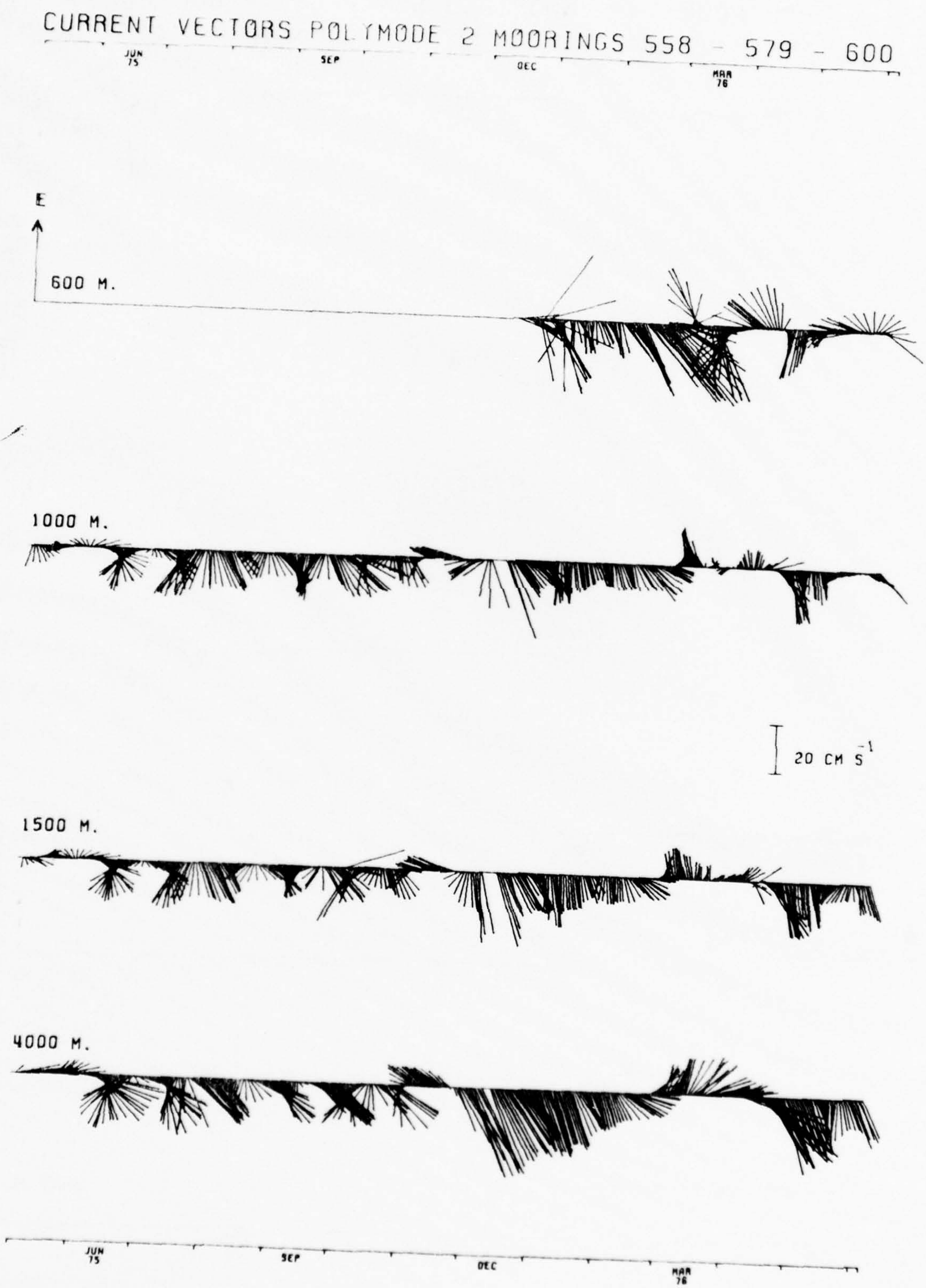
5112
5120
PRESSURE DECIBARS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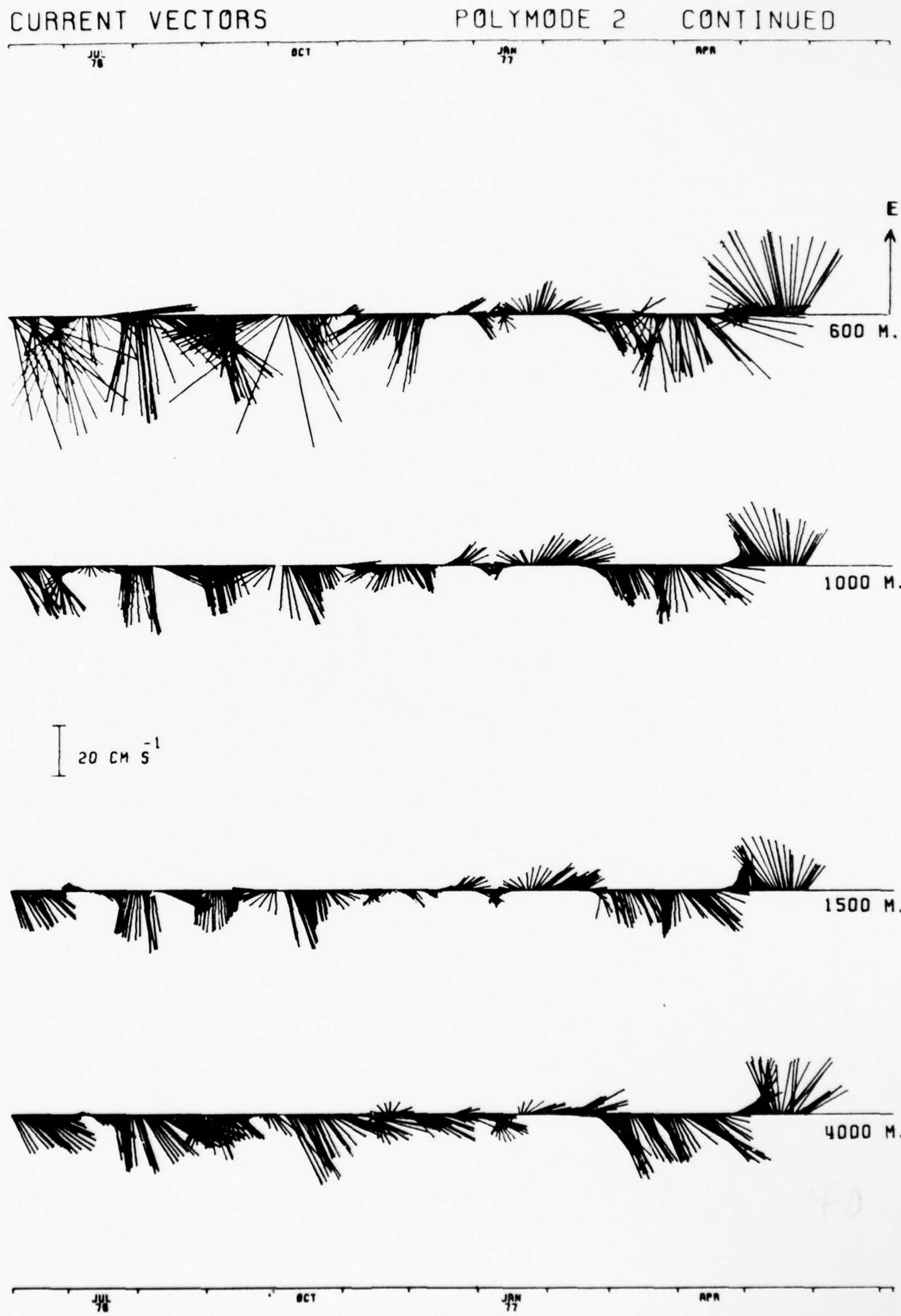
SEP
DEC
MAR 76
E
600 M.
1000 M.
20 CM S^-1
1500 M.
4000 M.
JUN 75
SEP
DEC
MAR 76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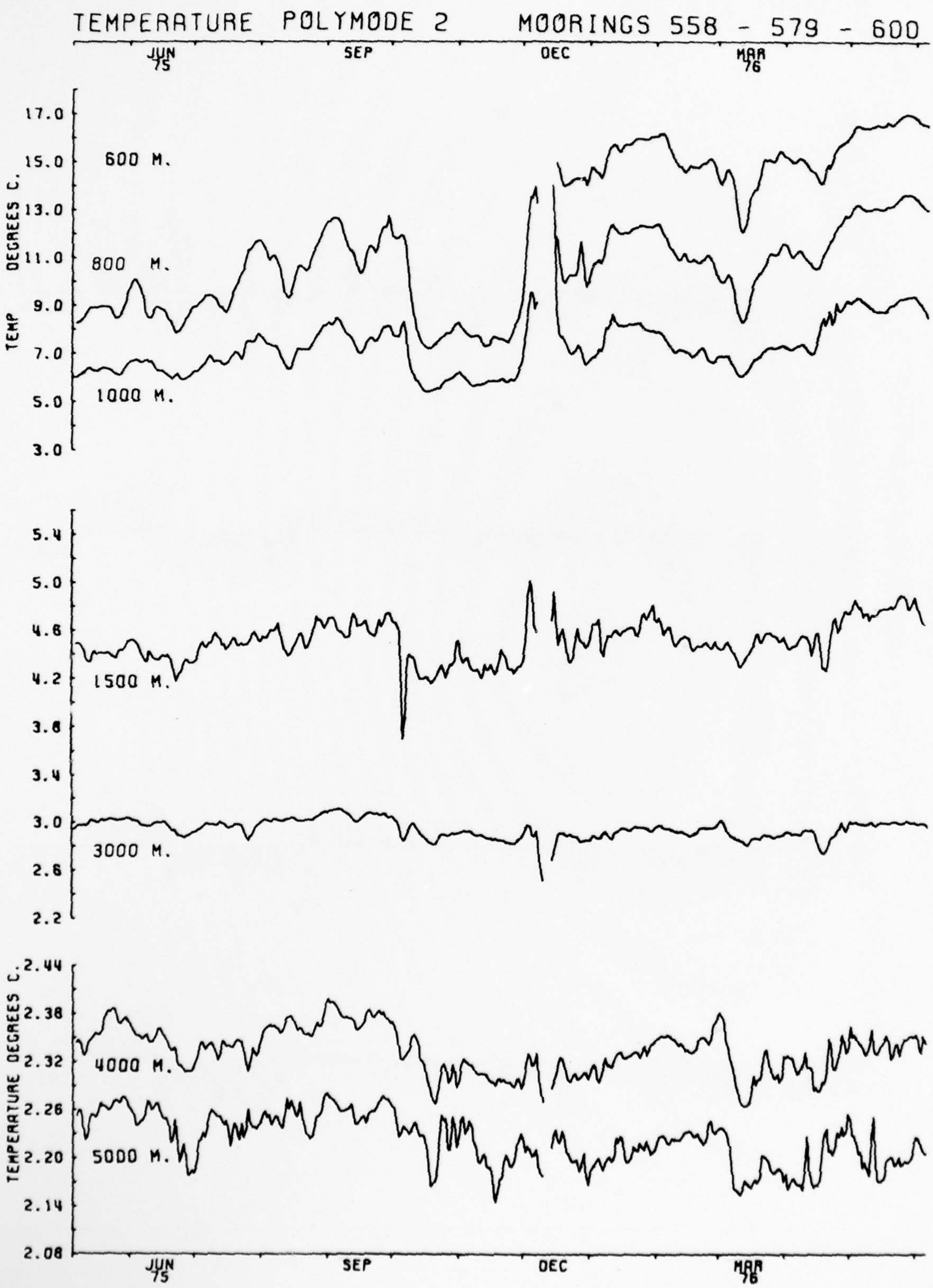
JUL 76
OCT
JAN 77
APR
E
600 M.
1000 M.
20 CM S^{-1}
1500 M.
4000 M.
JUL 76
OCT
JAN 77
APR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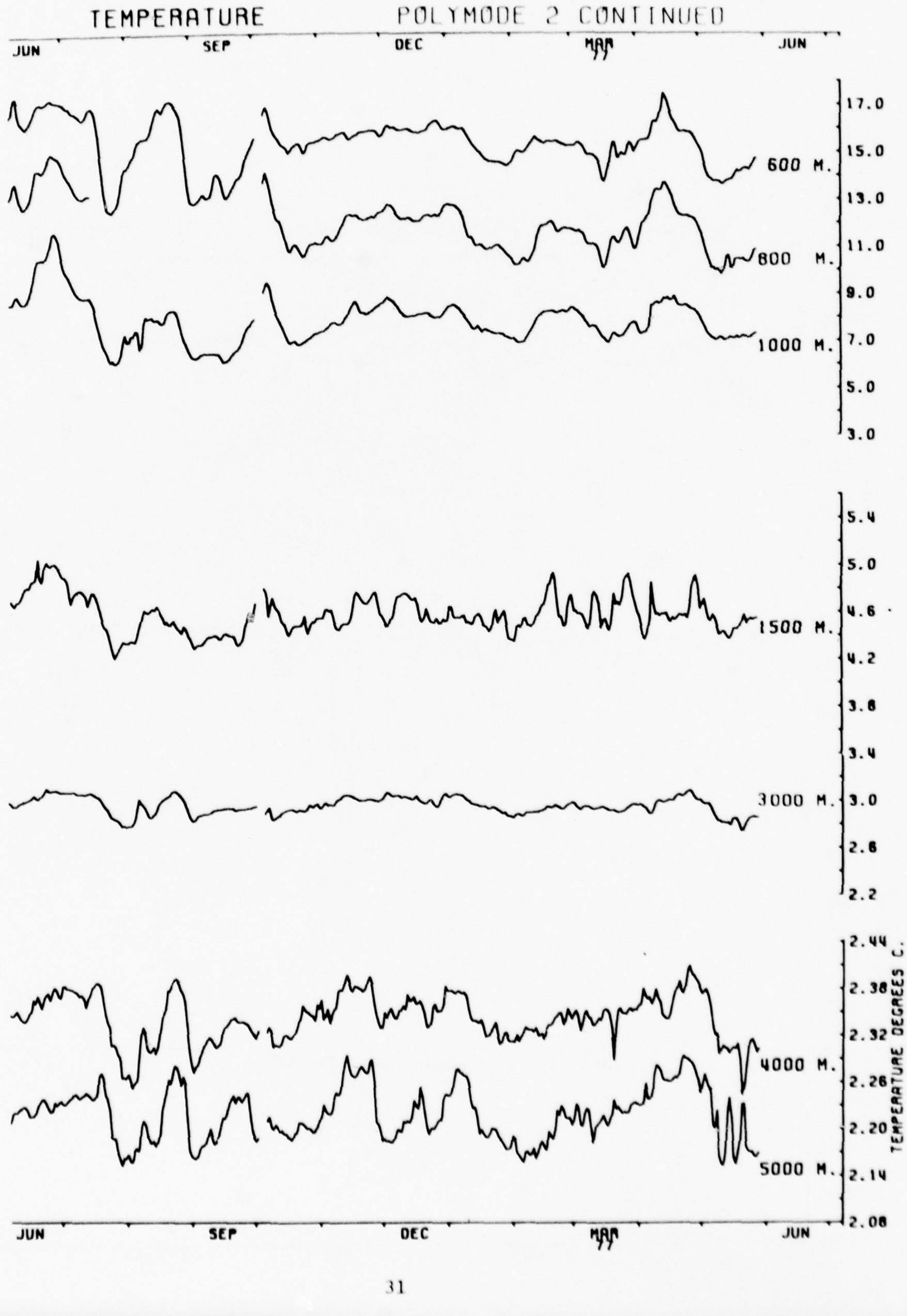
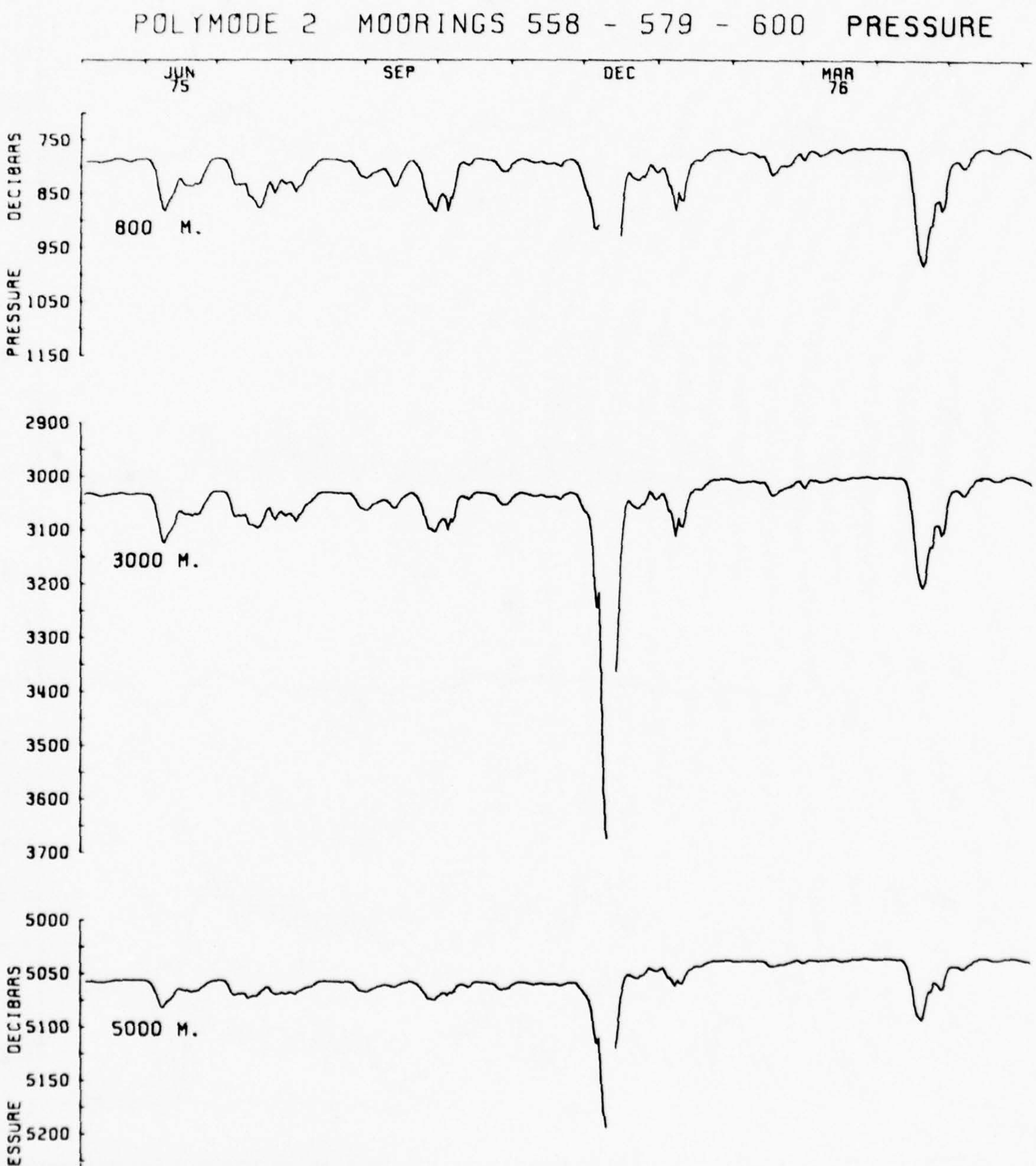
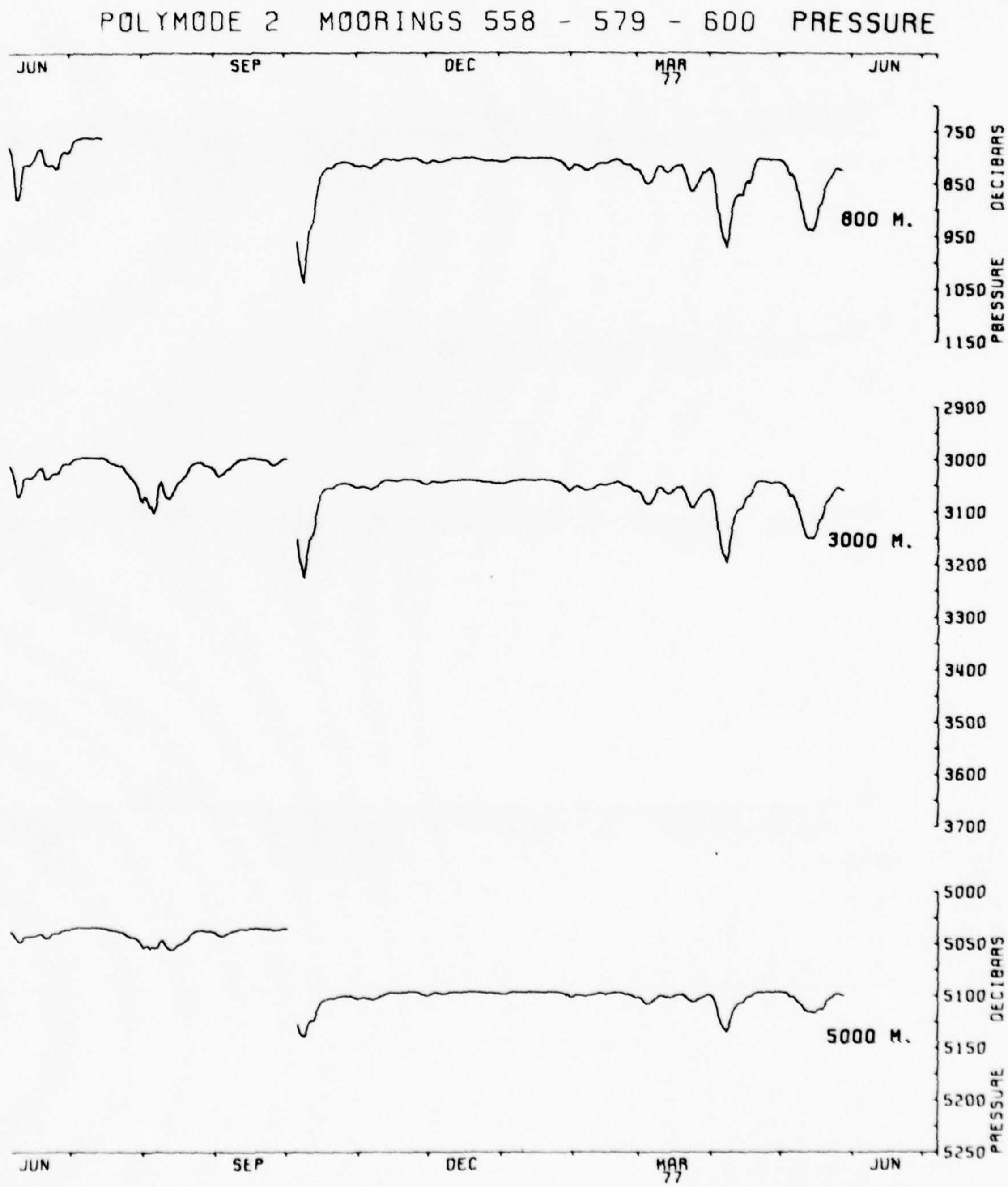
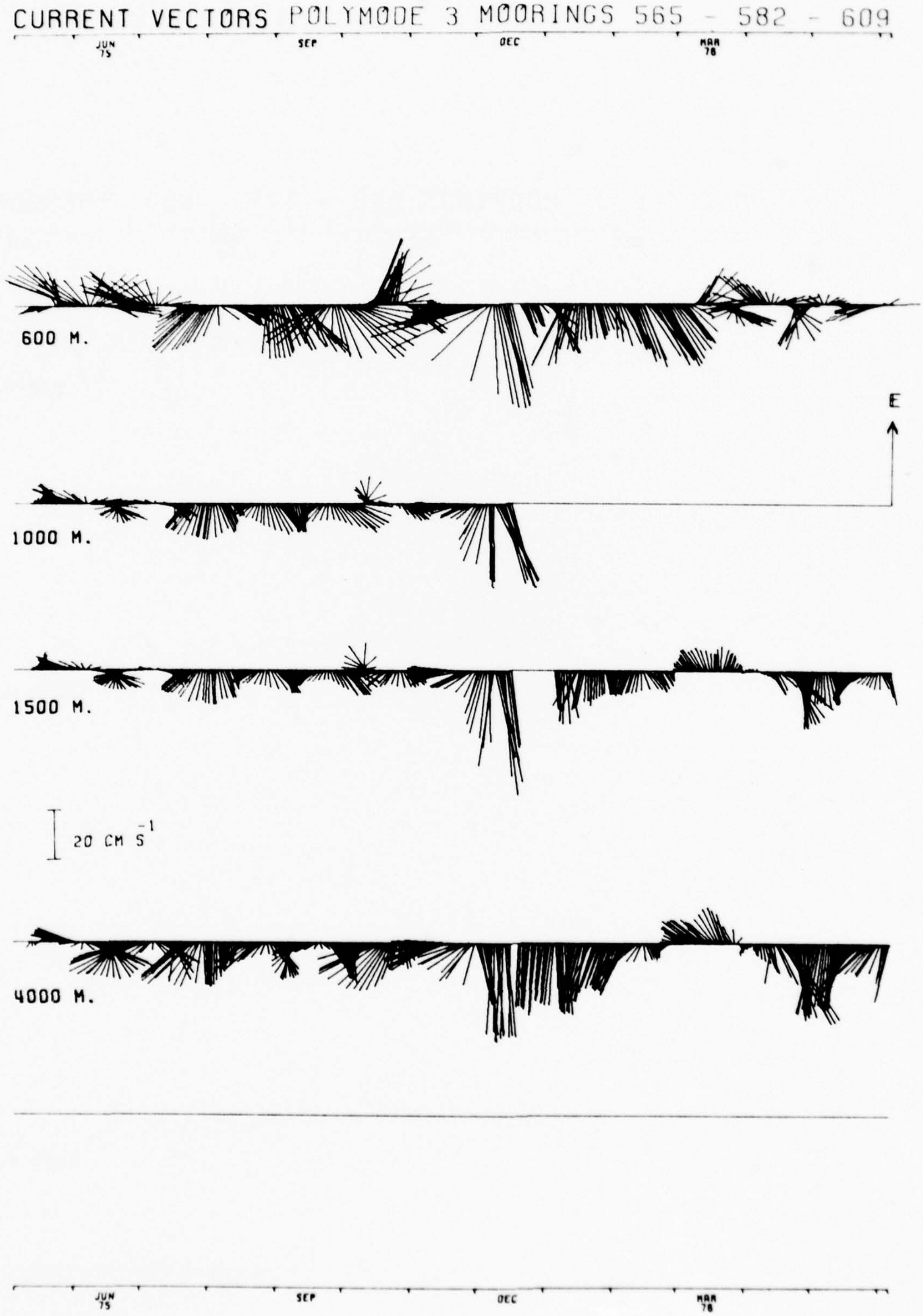
JUN 75
SEP
DEC
MAR 76
TEMP DEGREES C.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
1500 M.
3000 M.
TEMPERATURE DEGREES C.
2.44
2.38
2.32
2.26
2.20
2.14
2.08
4000 M.
5000 M.

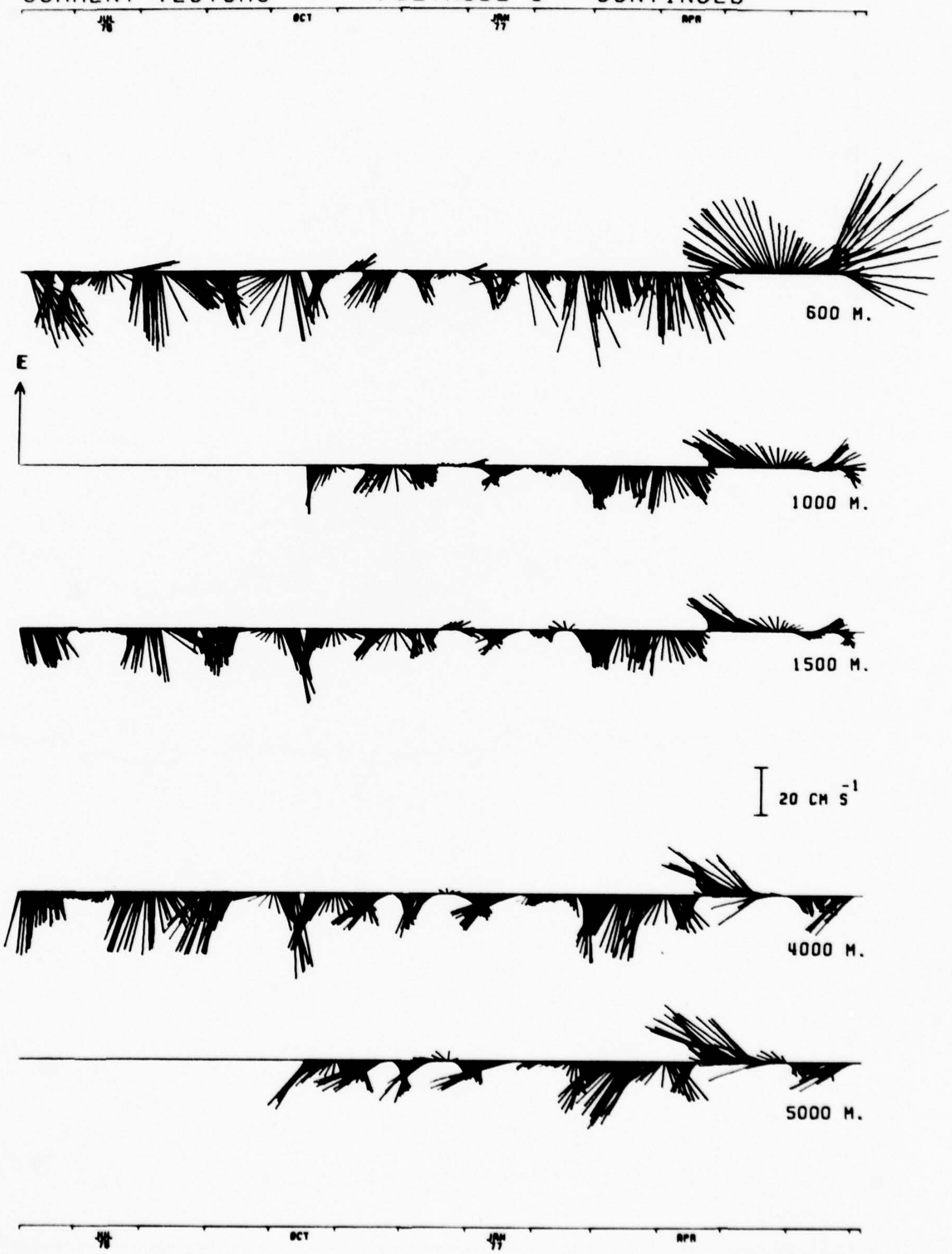

TEMPERATURE
POLYMODE 2 CONTINUED
JUN
SEP
DEC
MAR
77
JUN
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
1500 M.
3000 M.
2.44
2.38
2.32
2.26
2.20
2.14
2.08
4000 M.
5000 M.
TEMPERATURE DEGREES C.

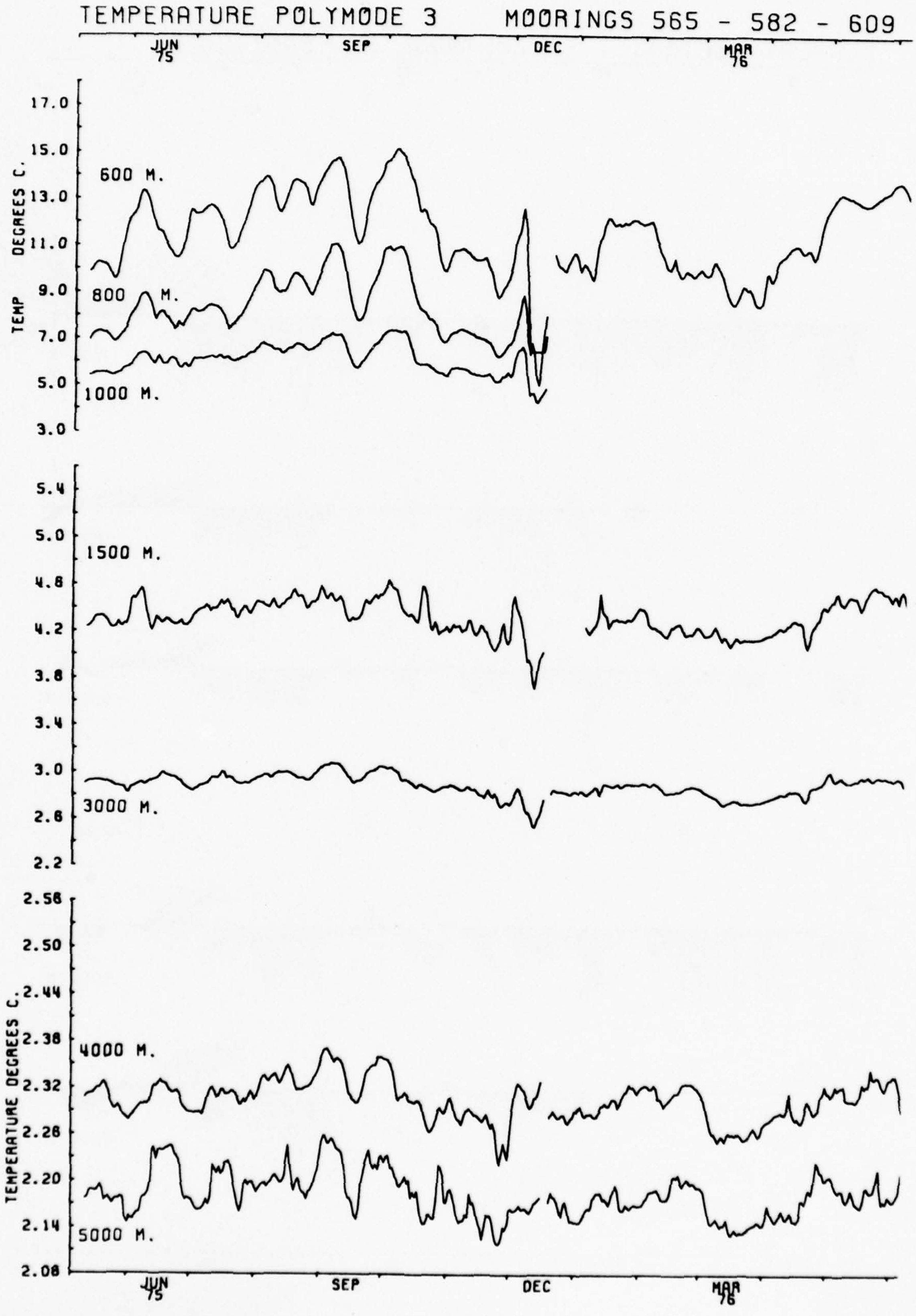

POLYMODE 2 MOORINGS 558 - 579 - 600 PRESSURE
JUN 75
SEP
DEC
MAR 76
PRESSURE DECIBARS
750
850
950
1050
1150
800 M.
2900
3000
3100
3200
3300
3400
3500
3600
3700
3000 M.
5000
5050
5100
5150
5200
5250
5000 M.

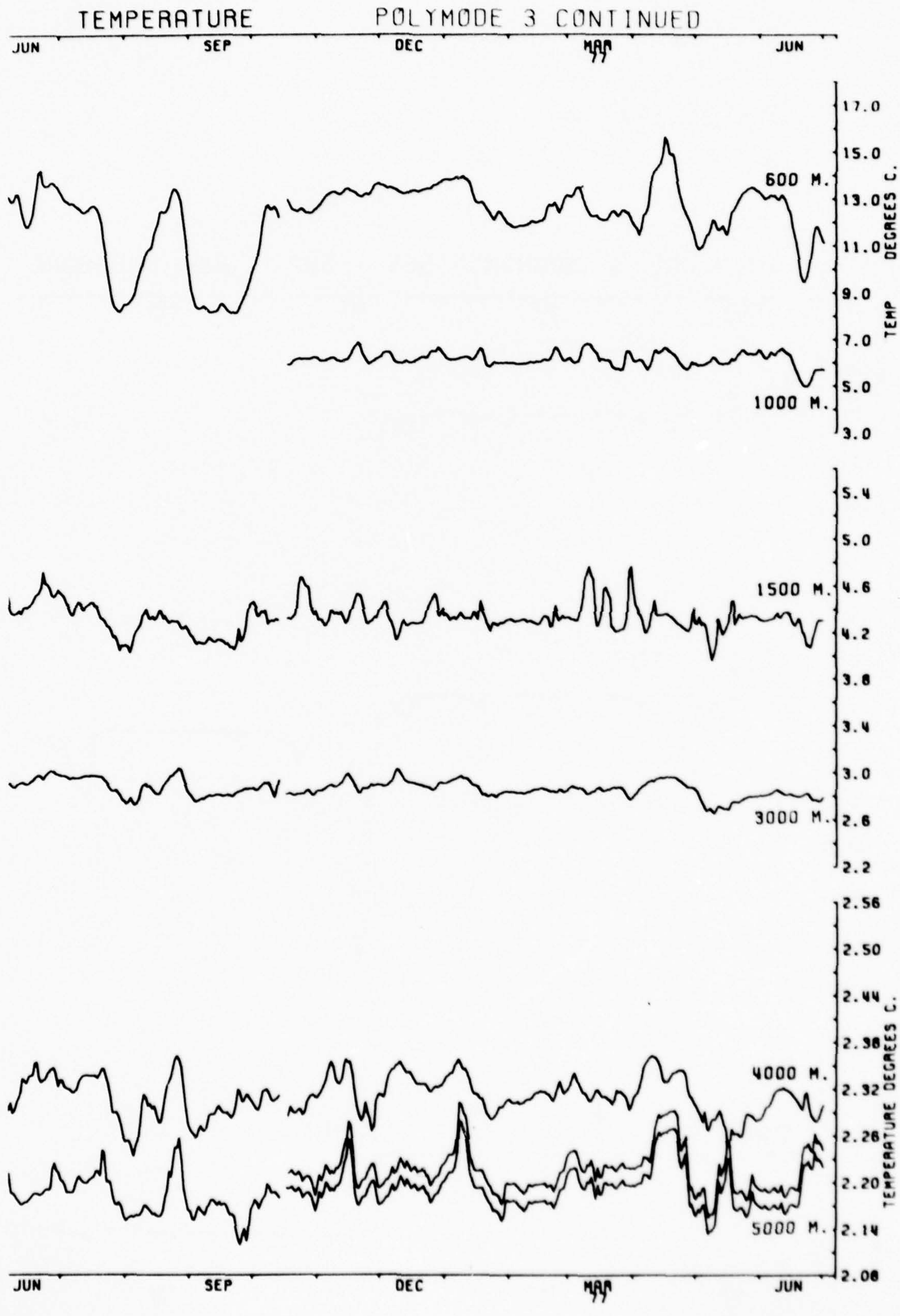

POLYMODE 2 MOORINGS 558 - 579 - 600 PRESSURE
JUN
SEP
DEC
MAR 77
JUN
750
850
950
1050
1150
PRESSURE DECIBARS
800 M.
2900
3000
3100
3200
3300
3400
3500
3600
3700
3000 M.
5000
5050
5100
5150
5200
5250
PRESSURE DECIBARS
5000 M.


CURRENT VECTORS POLYMODE 3 MOORINGS 565 - 582 - 609
JUN 75
SEP
DEC
MAR 76
600 M.
E
1000 M.
1500 M.
20 CM S^-1
4000 M.
JUN 75
SEP
DEC
MAR 76

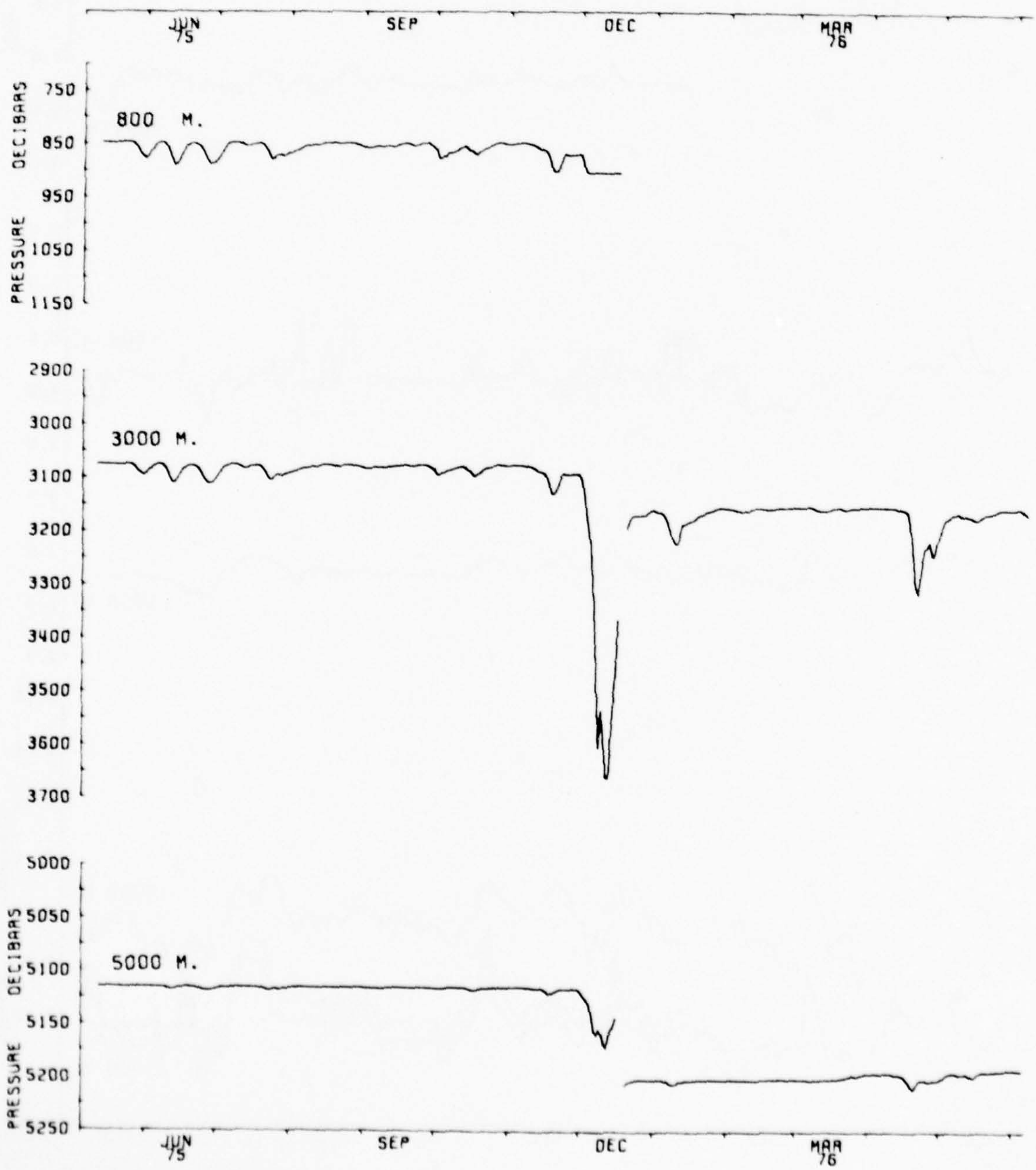
CURRENT VECTORS POLYMODE 3 CONTINUED



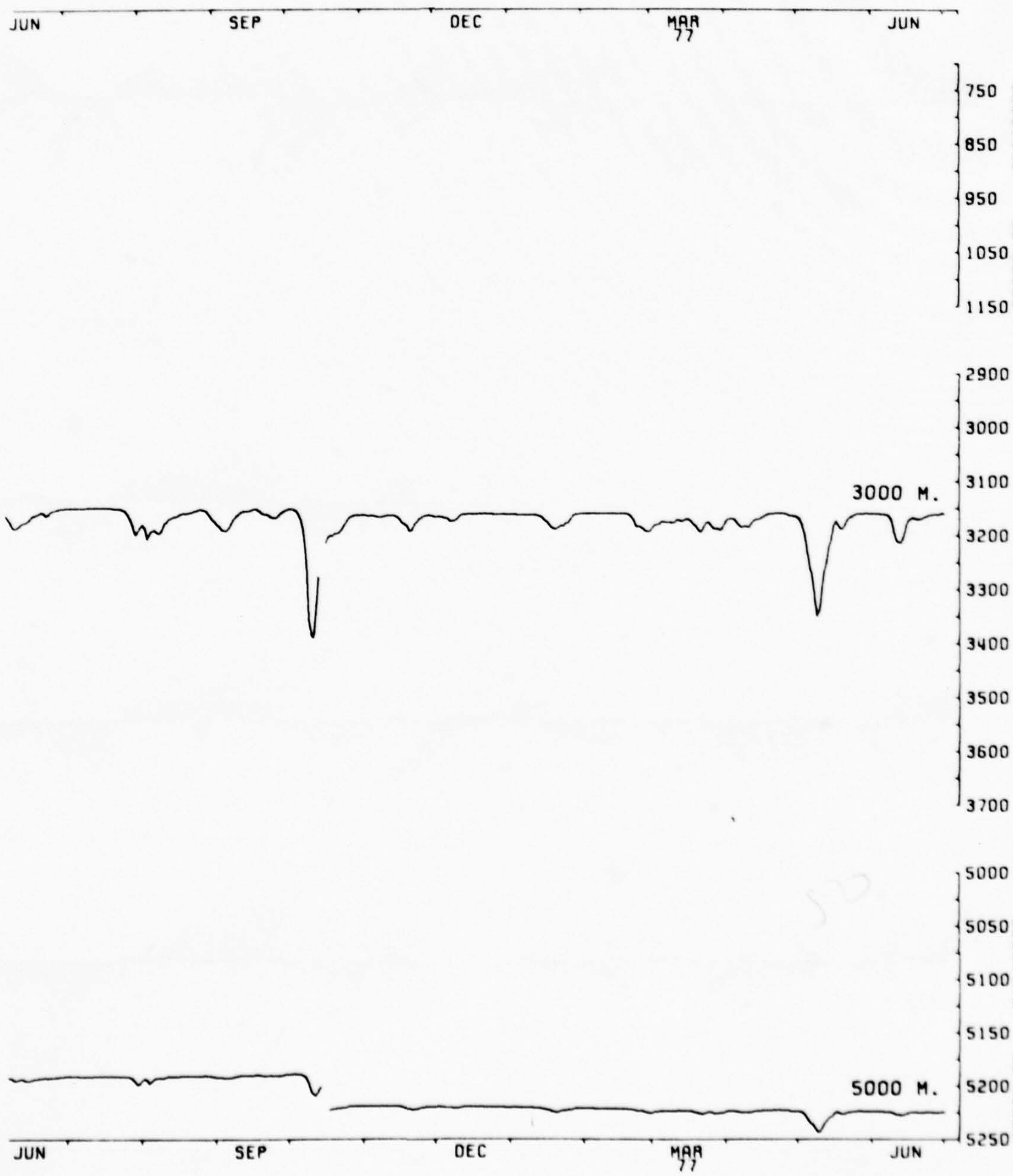

TEMPERATURE POLYMODE 3 MOORINGS 565 - 582 - 609
JUN 75
SEP
DEC
MAR 76
TEMP DEGREES C.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
1500 M.
3000 M.
TEMPERATURE DEGREES C.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
4000 M.
5000 M.

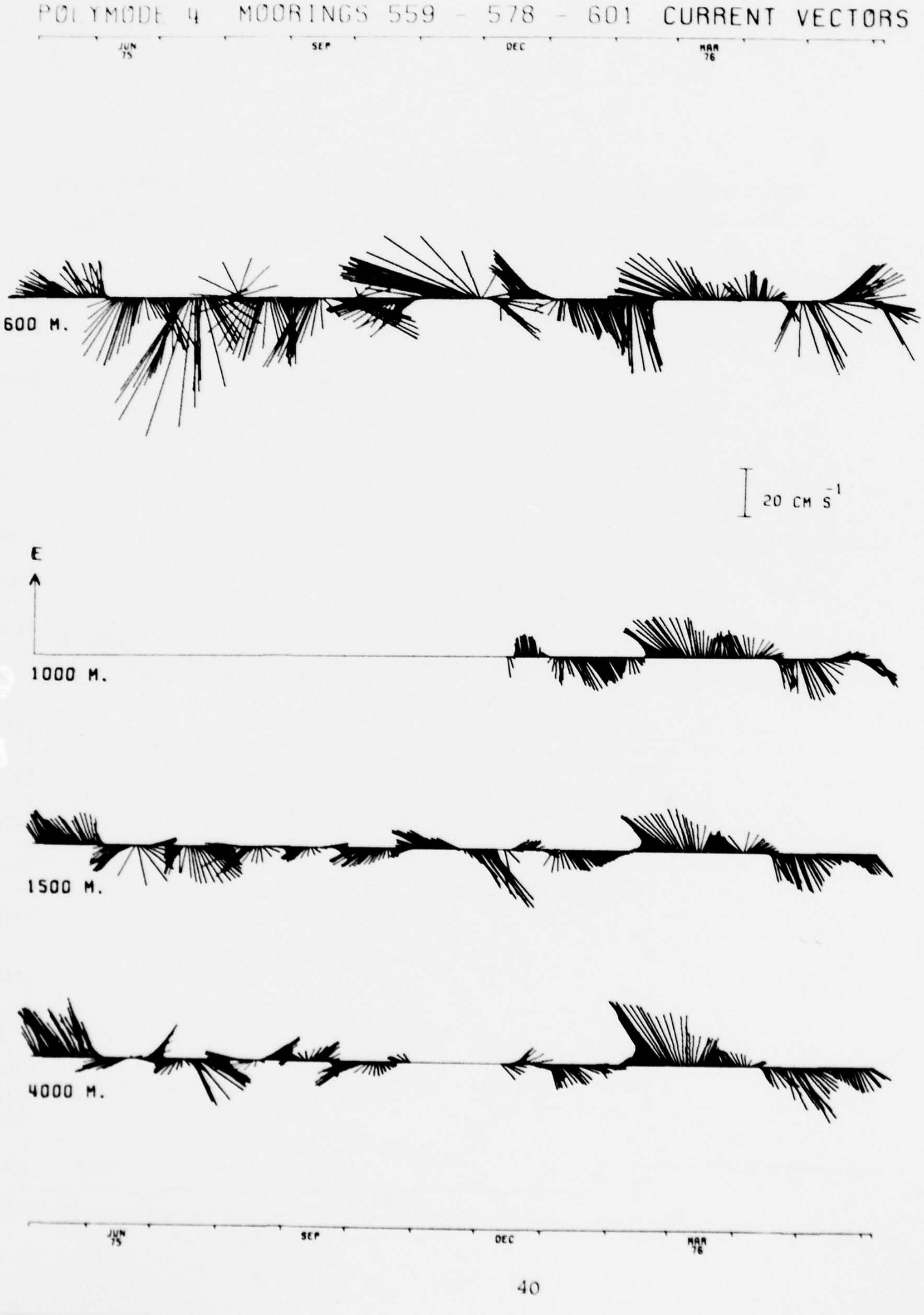

TEMPERATURE
POLYMODE 3 CONTINUED
JUN
SEP
DEC
MAR
77
JUN
600 M.
1000 M.
1500 M.
3000 M.
4000 M.
5000 M.
TEMP DEGREES C.
TEMPERATURE DEGREES C.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
5.4
5.0
4.6
4.2
3.8
3.4
3.0
2.6
2.2
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08

POLYMODE 3 MOORINGS 565 - 582 - 609 PRESSURE

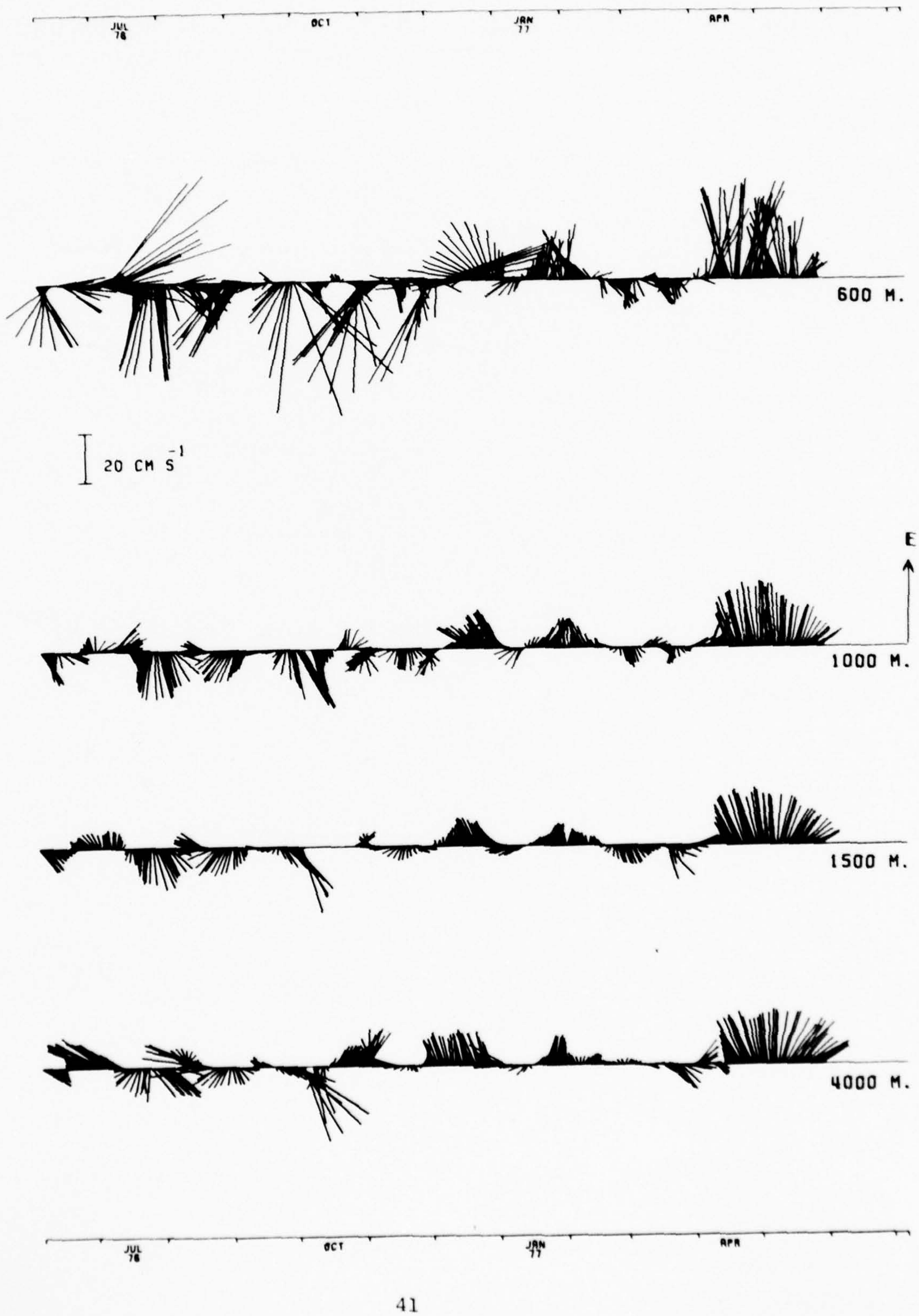


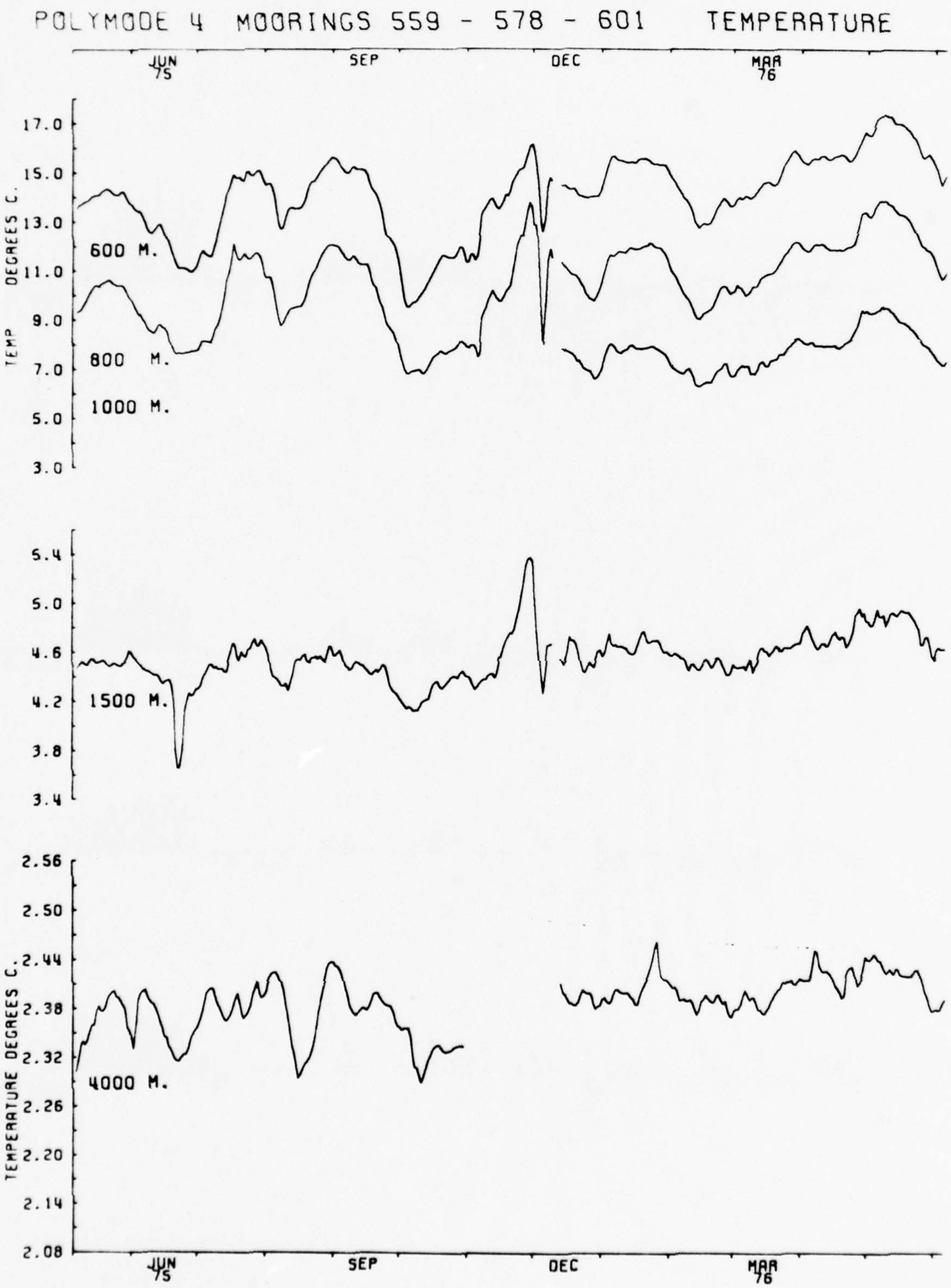
POLYMODE 3 MOORINGS 565 - 582 - 609 PRESSURE

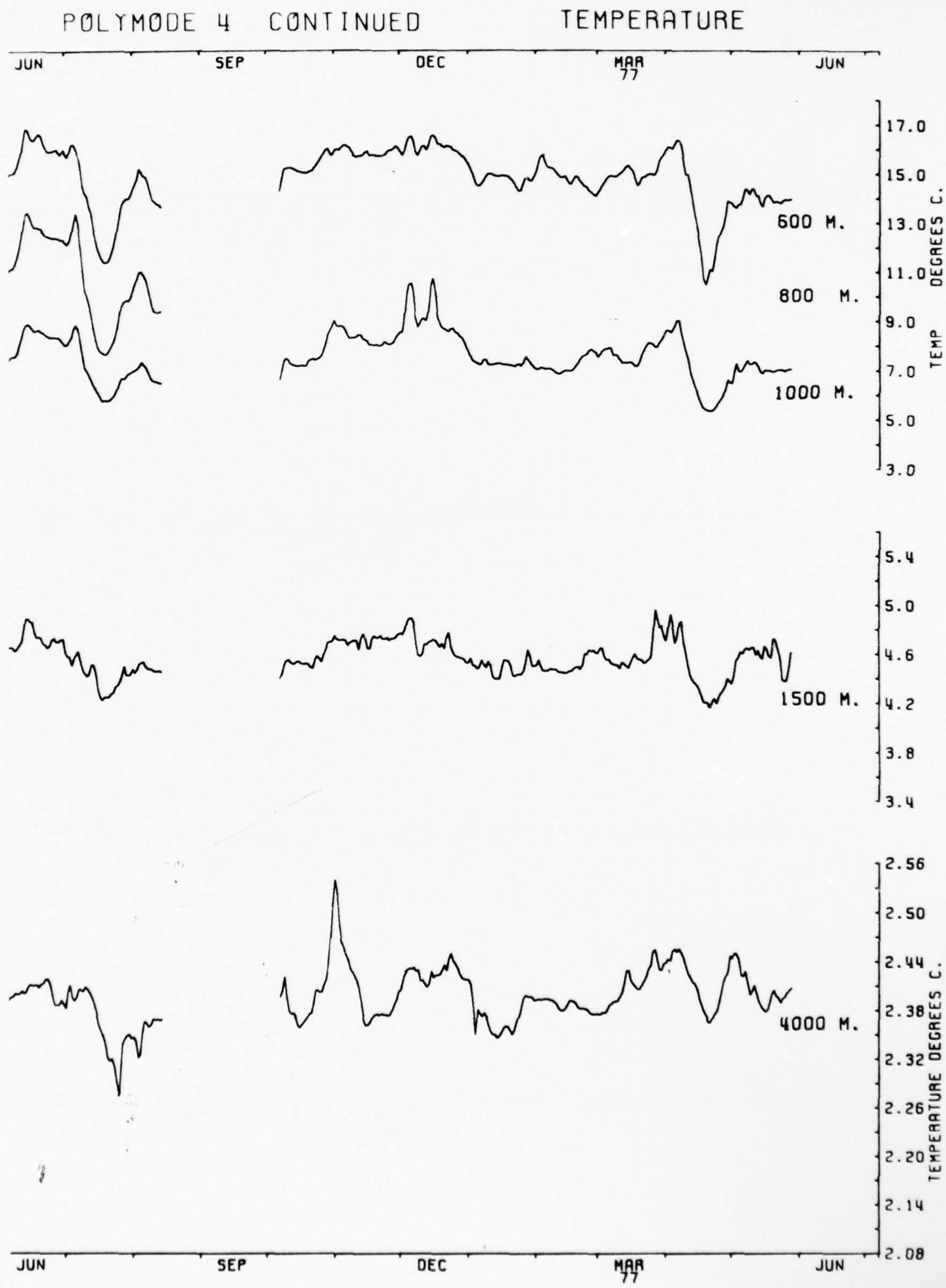



POLYMODE 4 MOORINGS 559 - 578 - 601 CURRENT VECTORS
JUN 75
SEP
DEC
MAR 76
600 M.
20 CM S-1
E
1000 M.
1500 M.
4000 M.
JUN 75
SEP
DEC
MAR 76

POLYMODE 4 CONTINUED CURRENT VECTORS

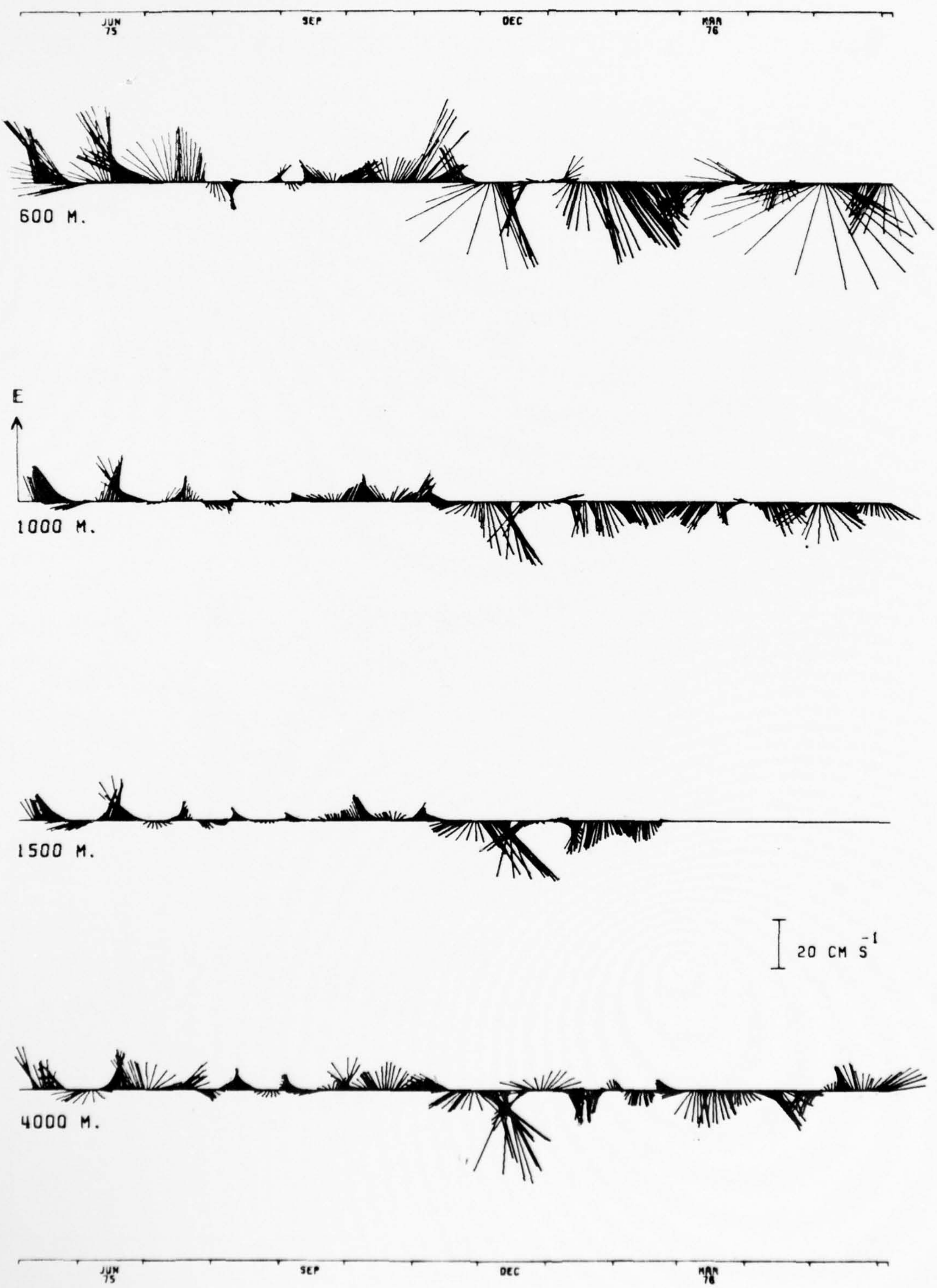


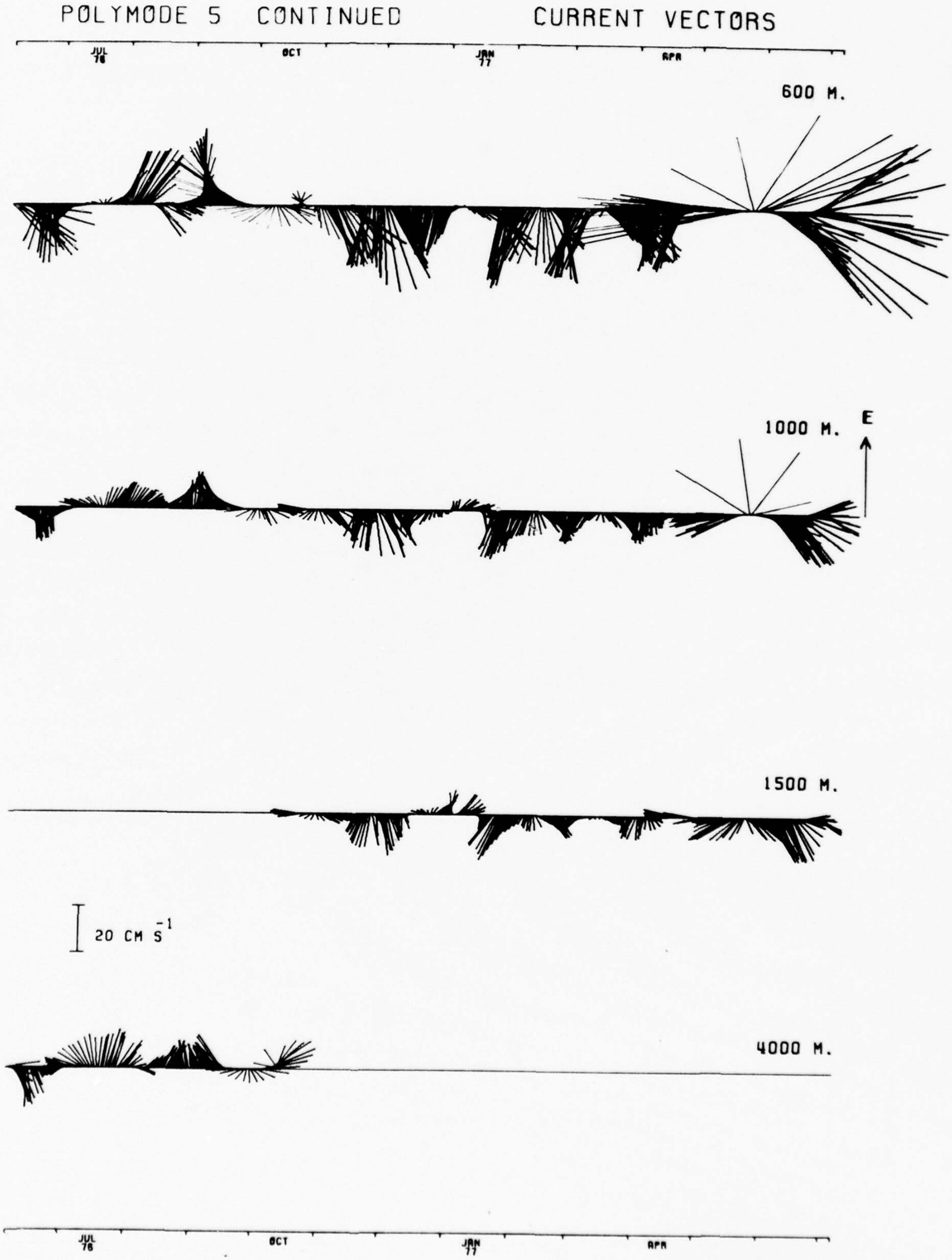

POLYMODE 4 MOORINGS 559 - 578 - 601 TEMPERATURE
JUN 75
SEP
DEC
MAR 76
TEMP DEGREES C.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
1500 M.
TEMPERATURE DEGREES C.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
4000 M.

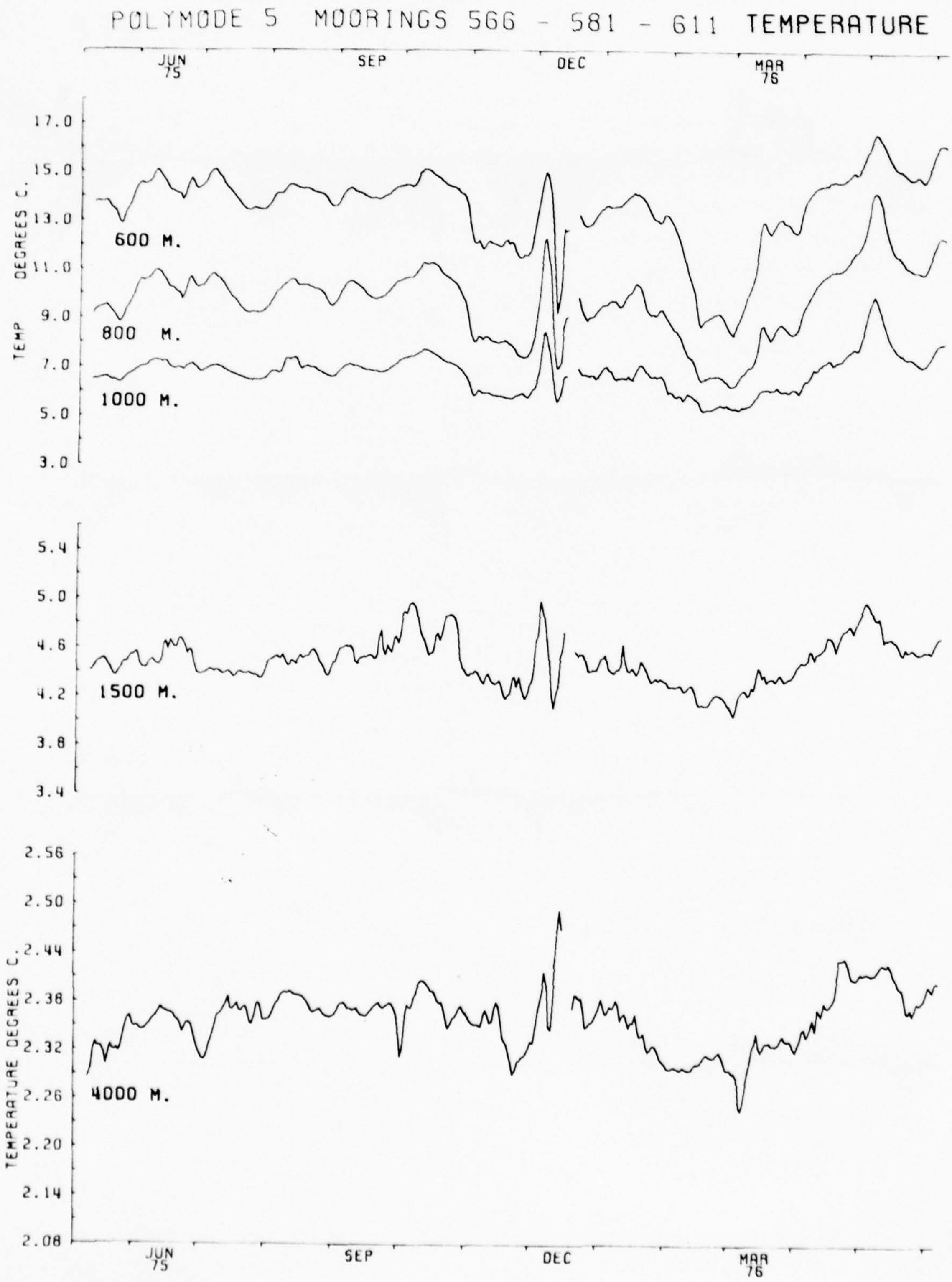


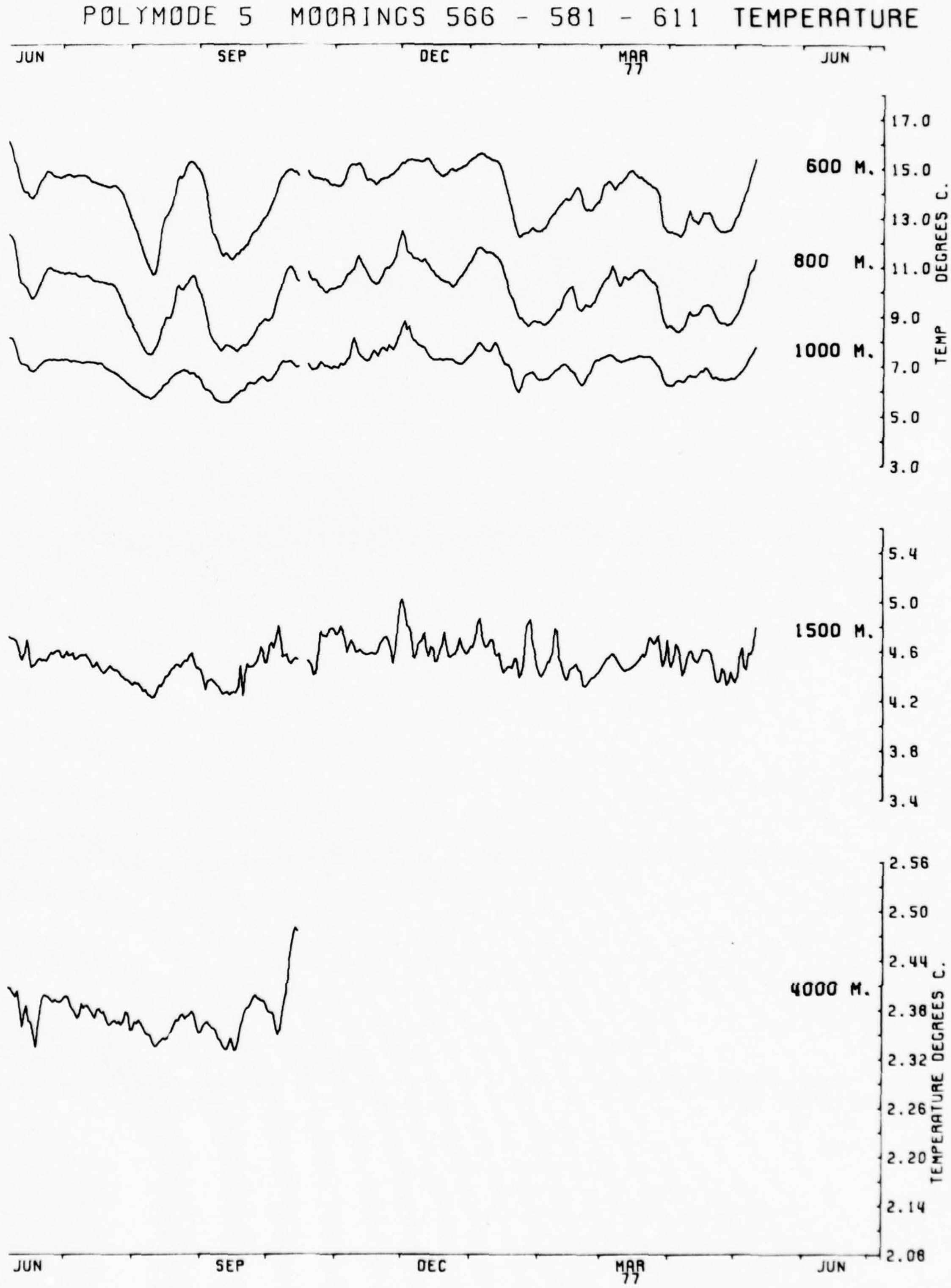
POLYMODE 4 CONTINUED TEMPERATURE
JUN
SEP
DEC
MAR 77
JUN
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
TEMP DEGREES C.
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
1500 M.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
TEMPERATURE DEGREES C.
4000 M.

POLYMODE 5 MOORINGS 566 - 581 - 611 CURRENT VECTORS

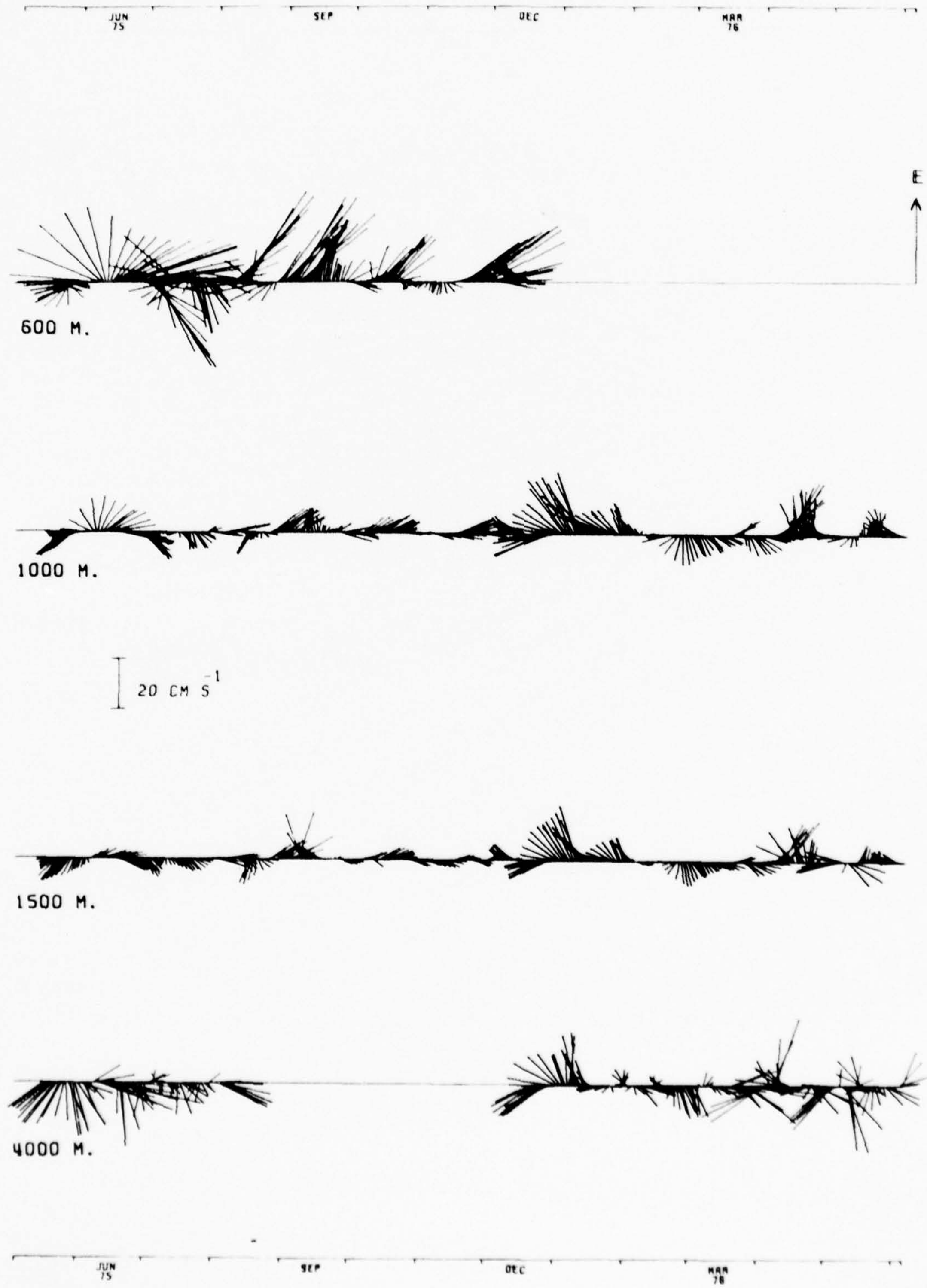



POLYMODE 5 CONTINUED CURRENT VECTORS
JUL 76
OCT
JAN 77
APR
600 M.
1000 M.
E
1500 M.
20 CM S^{-1}
4000 M.

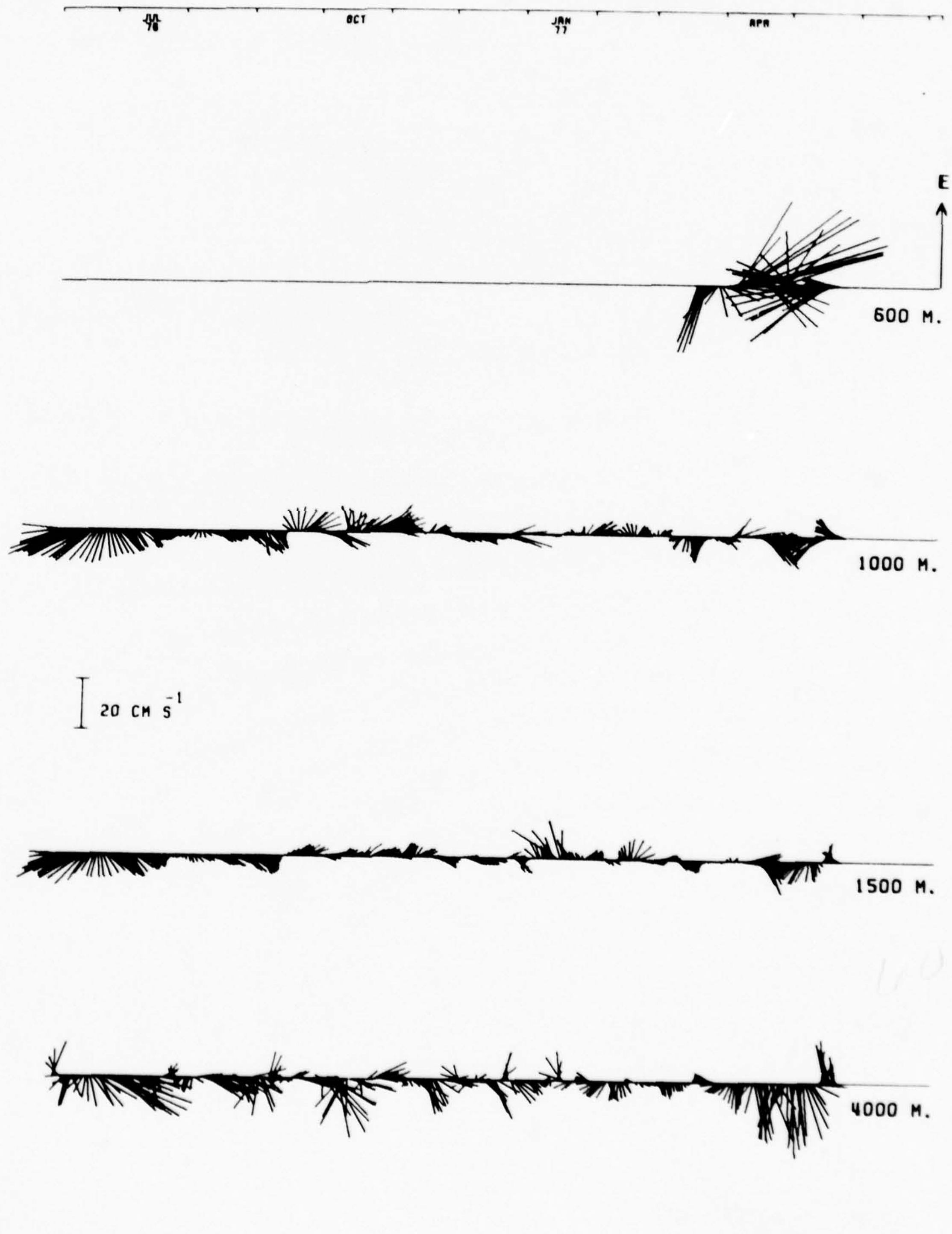

POLYMODE 5 MOORINGS 566 - 581 - 611 TEMPERATURE
JUN 75
SEP
DEC
MAR 76
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
TEMP DEGREES C.
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
1500 M.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
TEMPERATURE DEGREES C.
4000 M.


POLYMODE 5 MOORINGS 566 - 581 - 611 TEMPERATURE
JUN
SEP
DEC
MAR
77
JUN
600 M.
800 M.
1000 M.
1500 M.
4000 M.
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
TEMP DEGREES C.
5.4
5.0
4.6
4.2
3.8
3.4
2.56
2.50
2.44
2.38
2.32
2.26
2.20
2.14
2.08
TEMPERATURE DEGREES C.

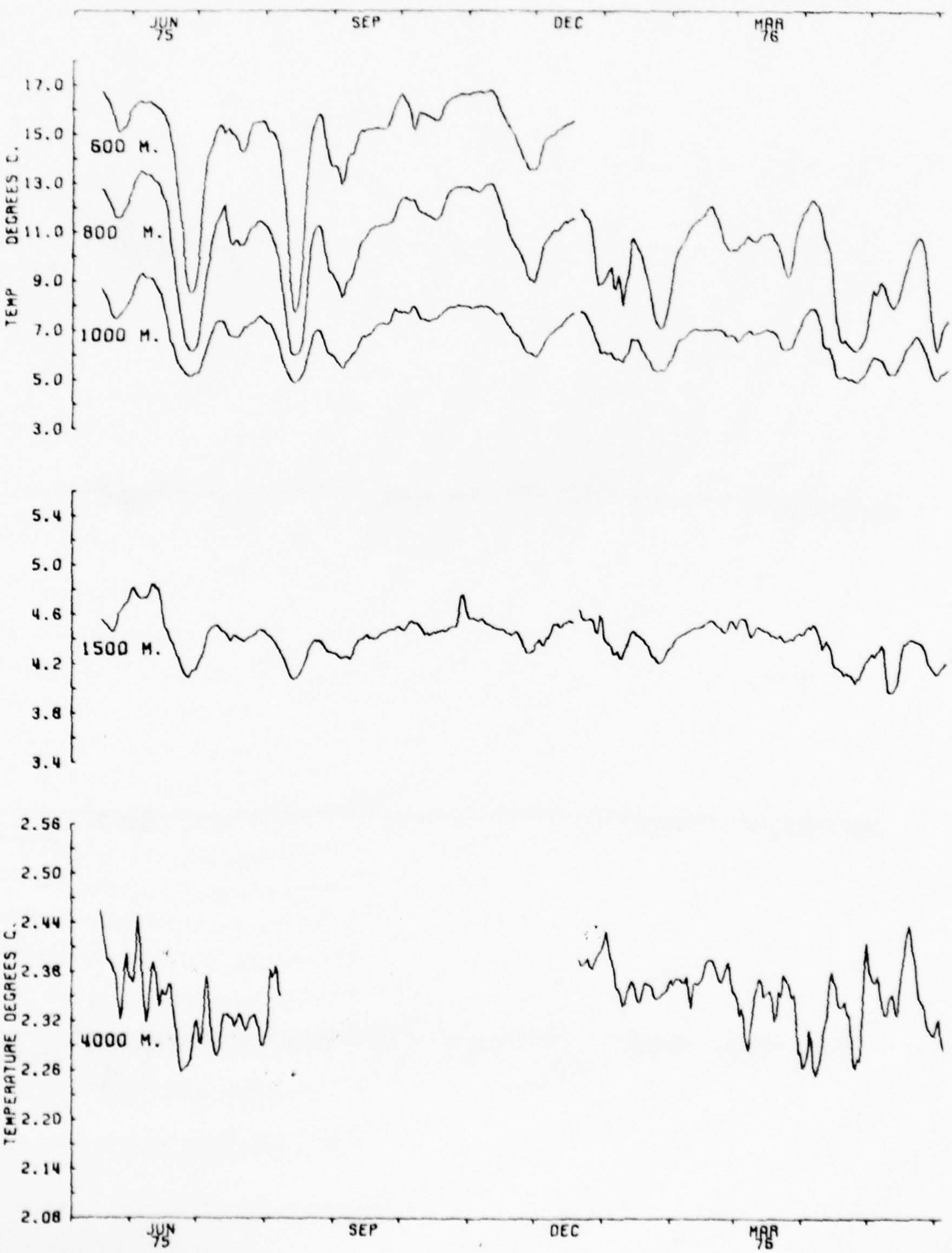
POLYMODE 6 MOORINGS 568 - 584 - 598 CURRENT VECTORS



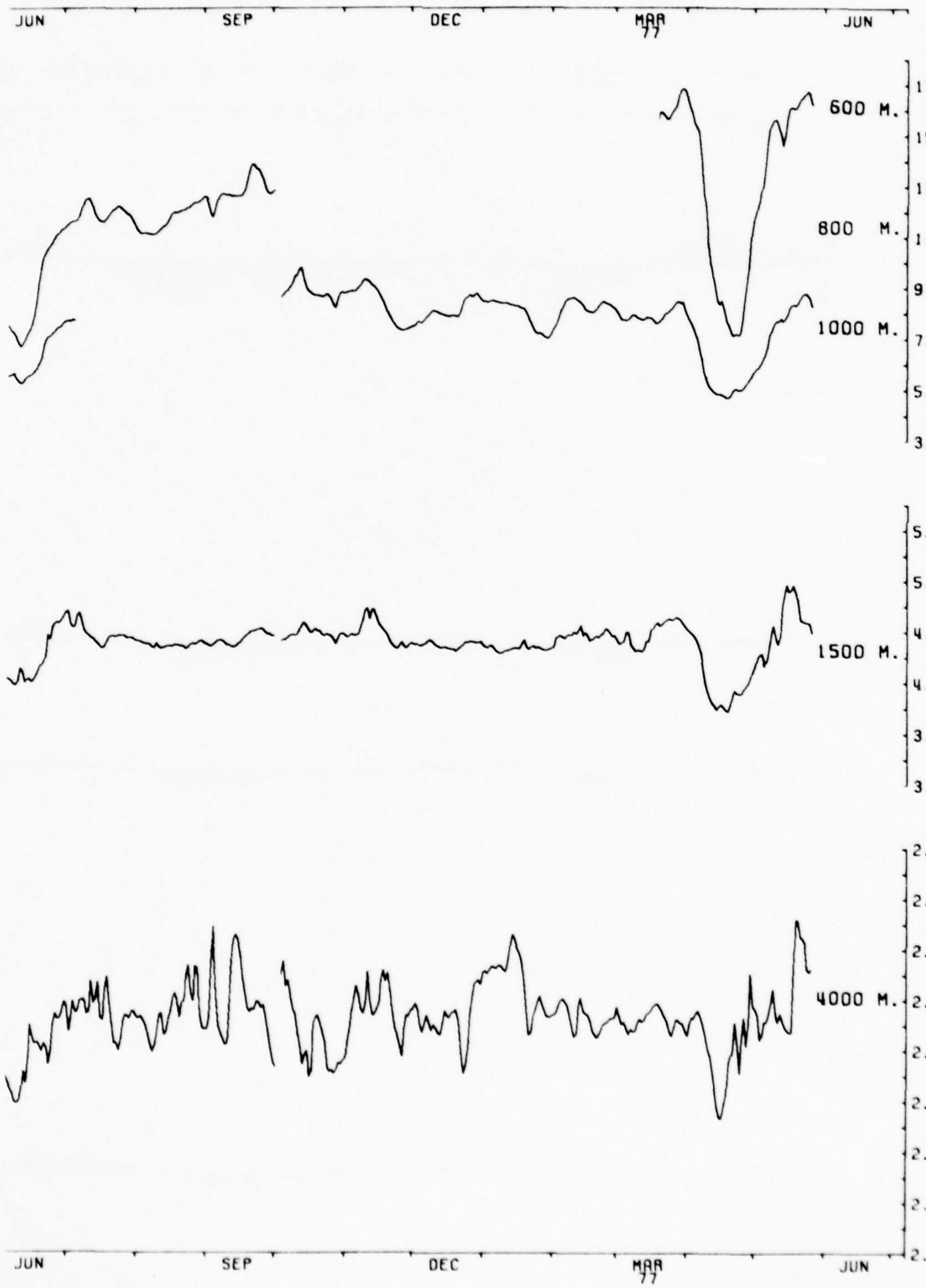
POLYMODE 6 CONTINUED CURRENT VECTORS



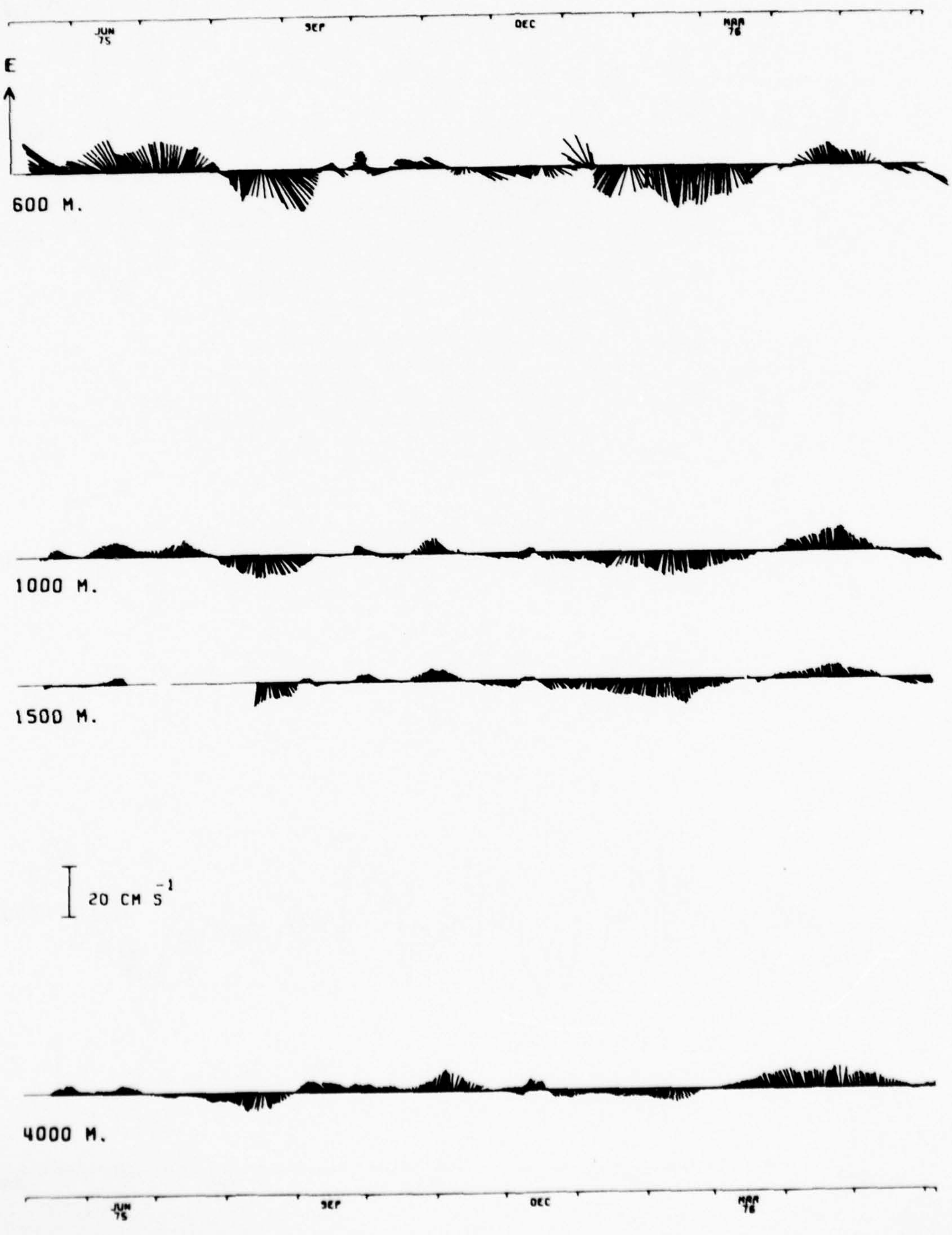
POLYMODE 6 MOORINGS 568 - 584 - 598 TEMPERATURE



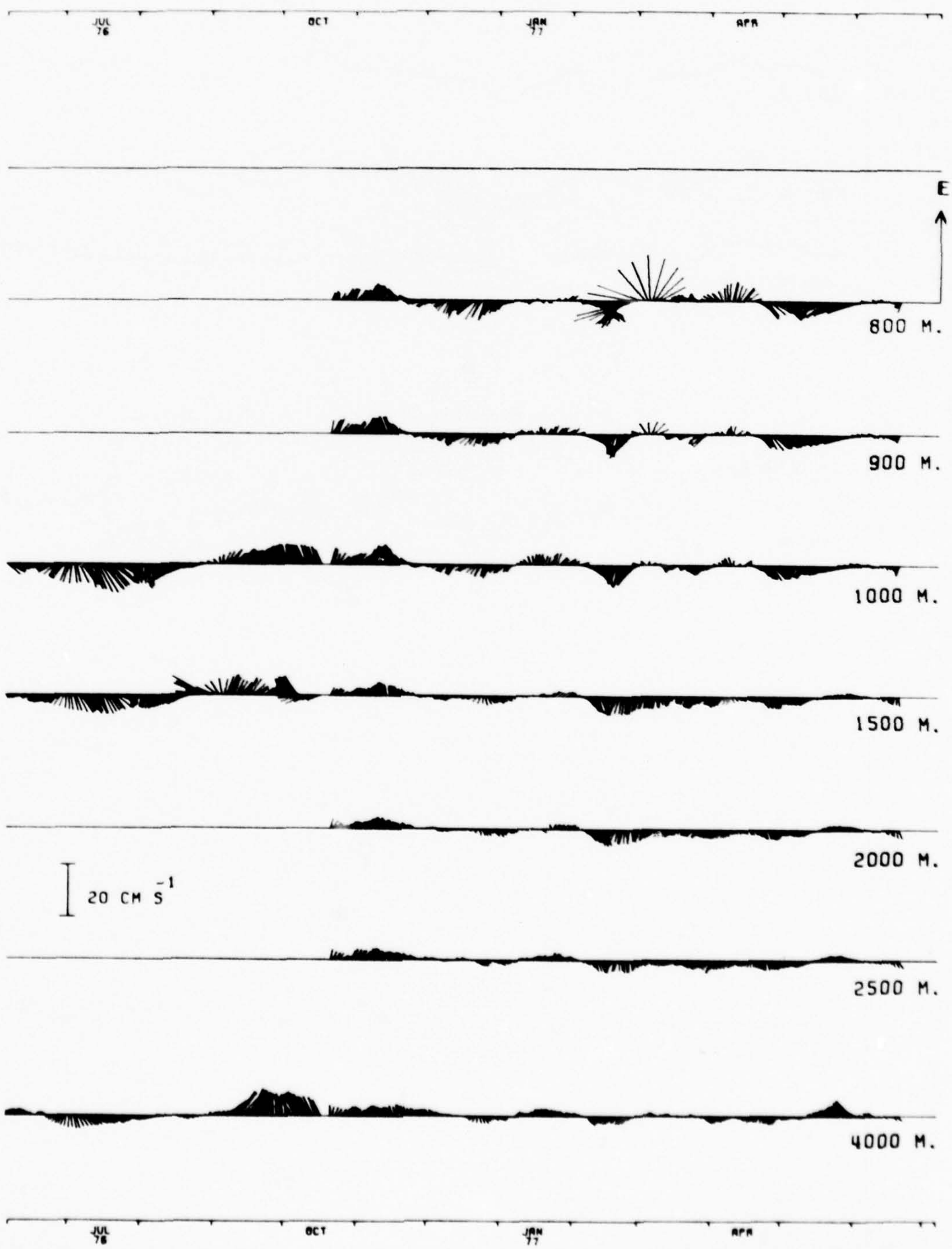
POLYMODE 6 CONTINUED TEMPERATURE

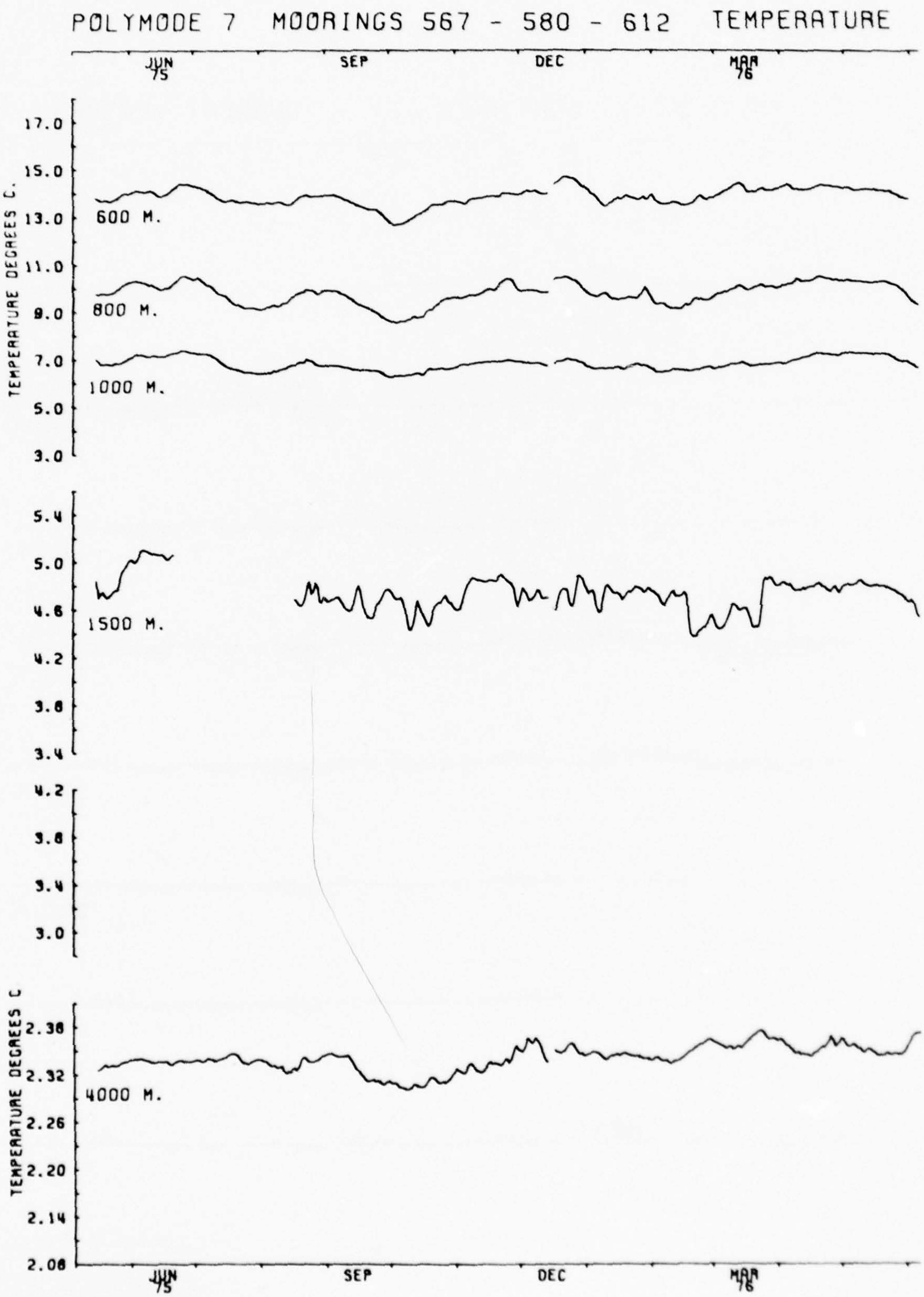


POLYMODE 7 MOORINGS 567 - 580 - 612 CURRENT VECTORS

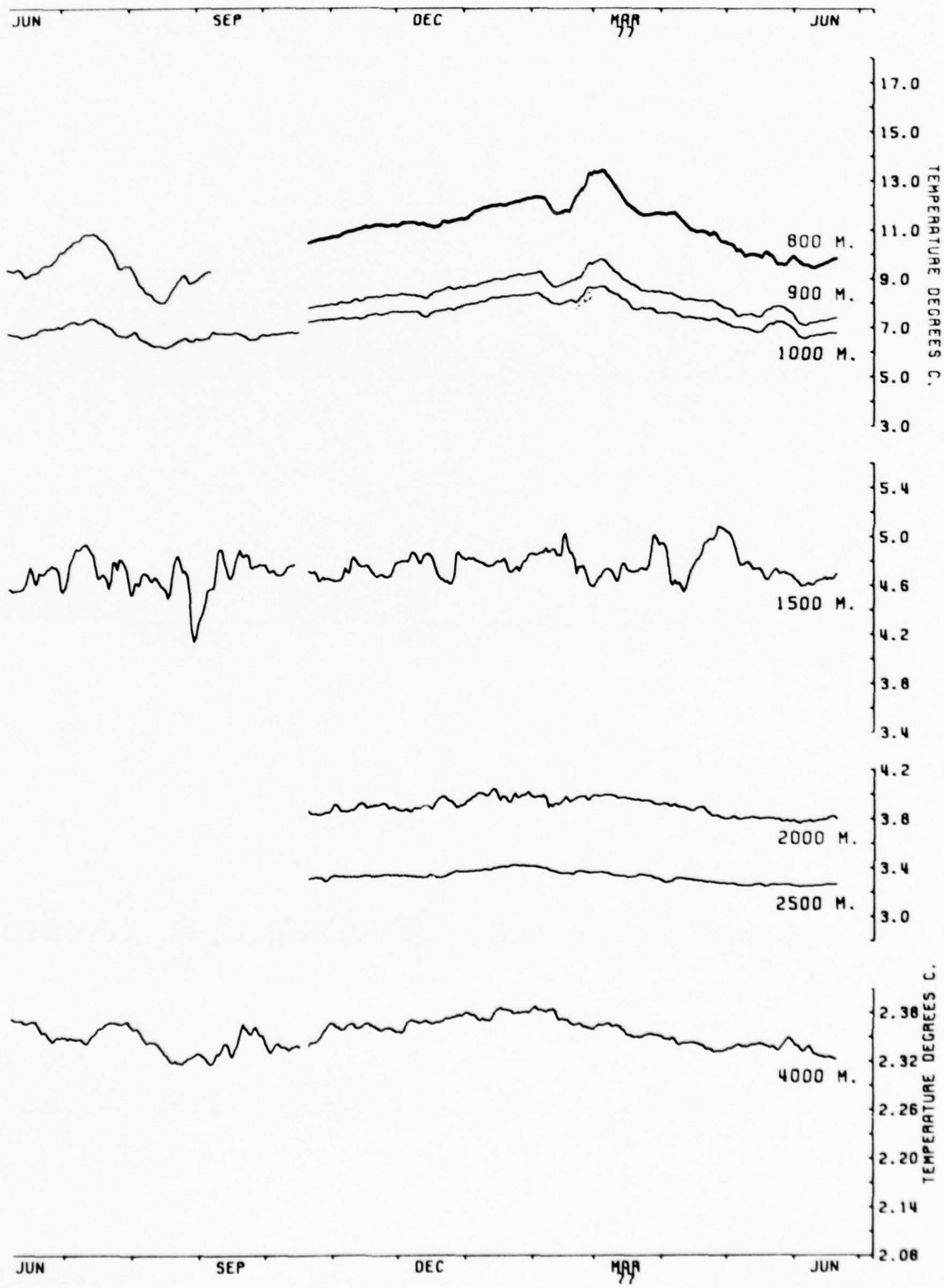


POLYMODE 7 CONTINUED CURRENT VECTORS

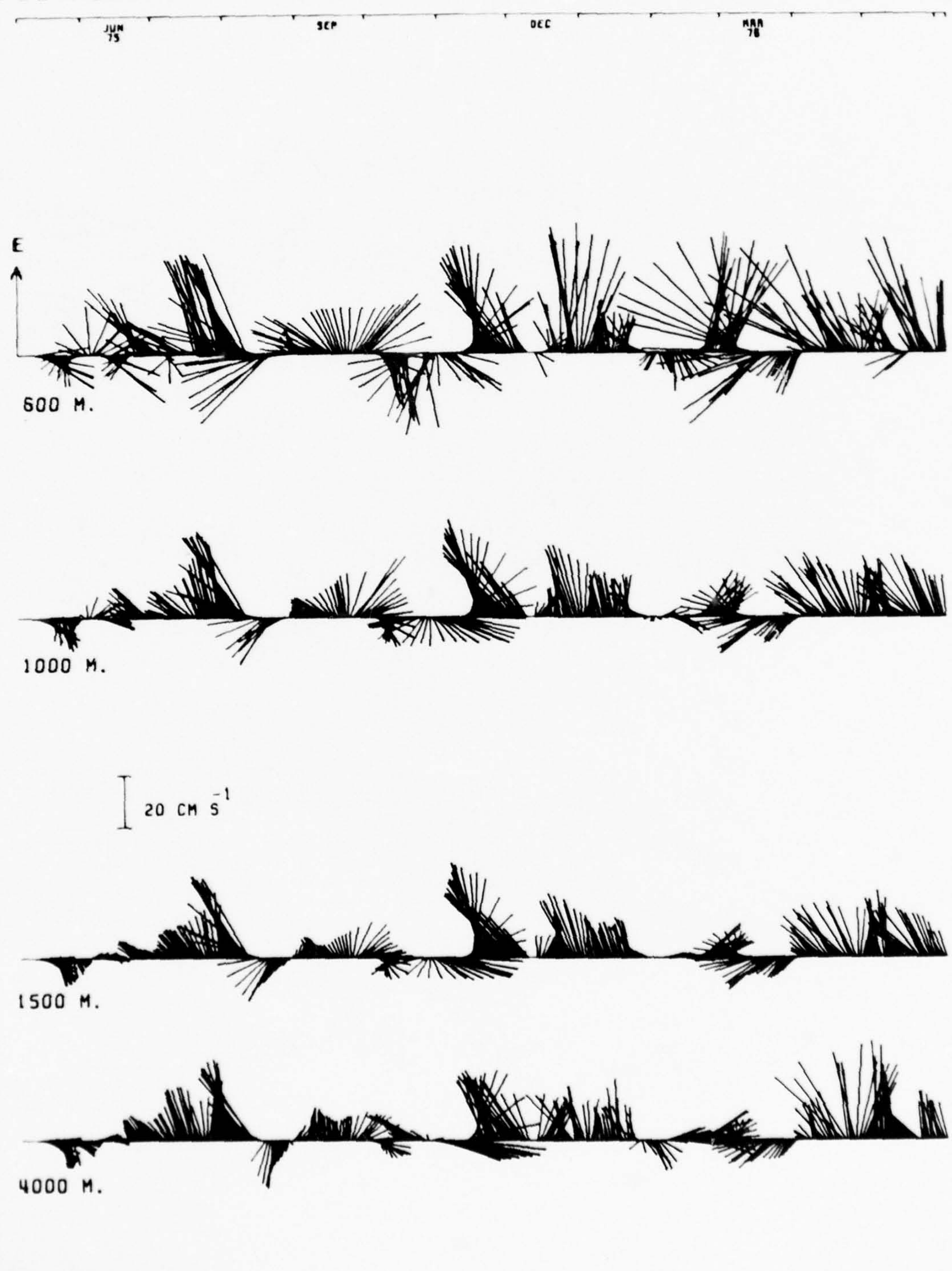


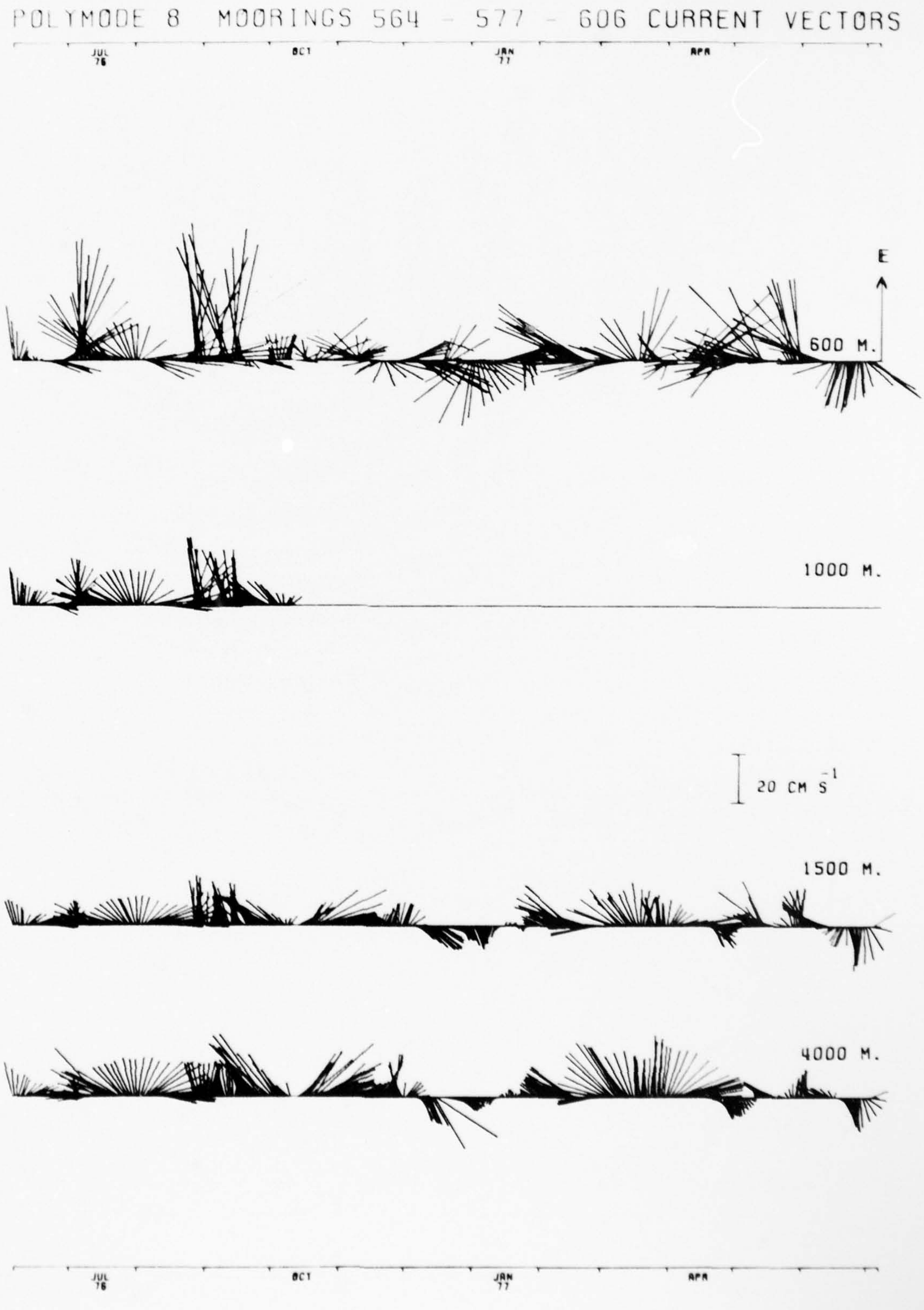

POLYMODE 7 MOORINGS 567 - 580 - 612 TEMPERATURE
JUN 75
SEP
DEC
MAR 76
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
TEMPERATURE DEGREES C.
600 M.
800 M.
1000 M.
5.4
5.0
4.6
4.2
3.8
3.4
1500 M.
4.2
3.8
3.4
3.0
2.38
2.32
2.26
2.20
2.14
2.08
TEMPERATURE DEGREES C
4000 M.
JUN 75
SEP
DEC
MAR 76

POLYMODE 7 CONTINUED TEMPERATURE

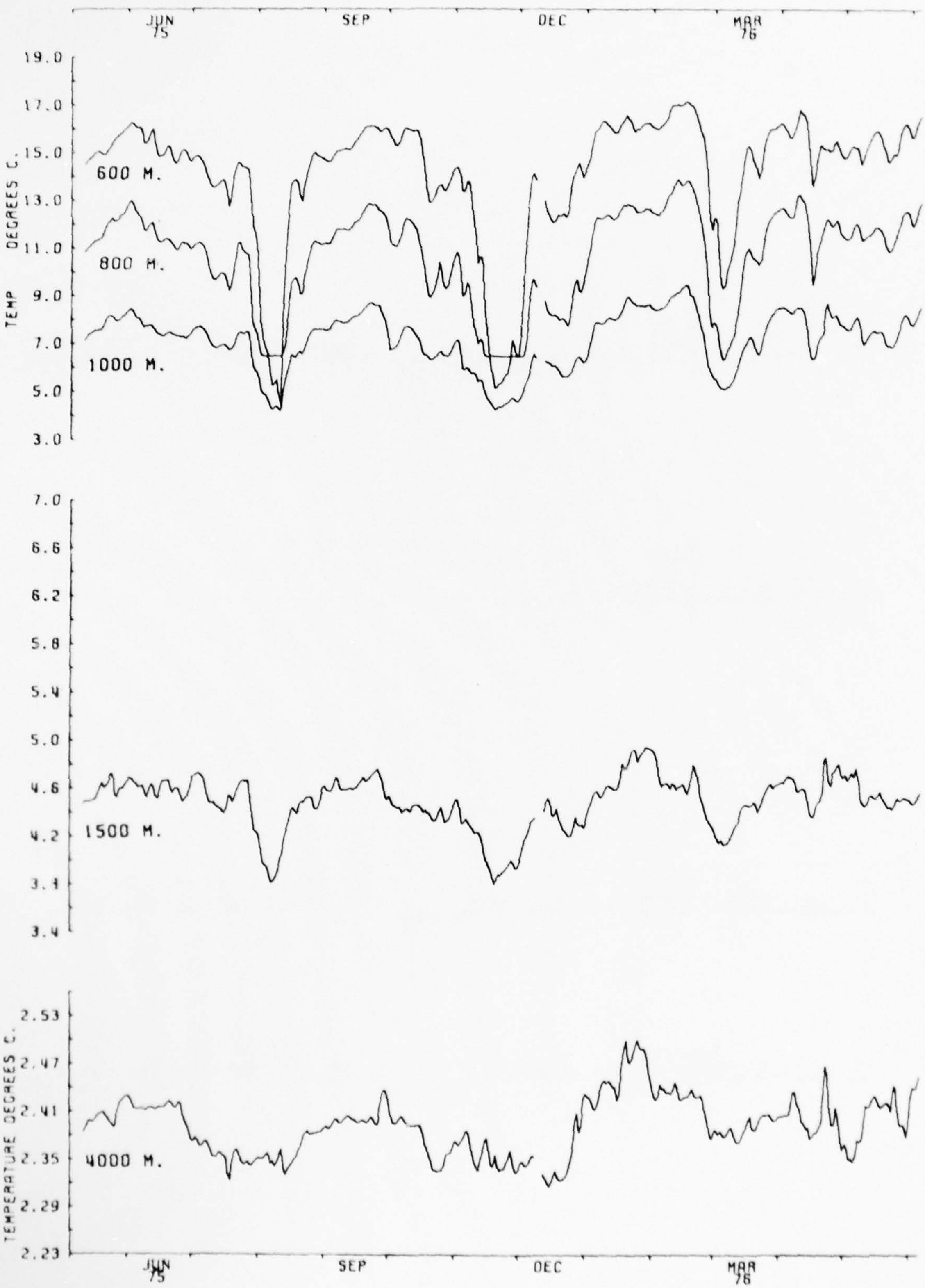


POLYMODE 8 MOORINGS 564 - 577 - 606 CURRENT VECTORS

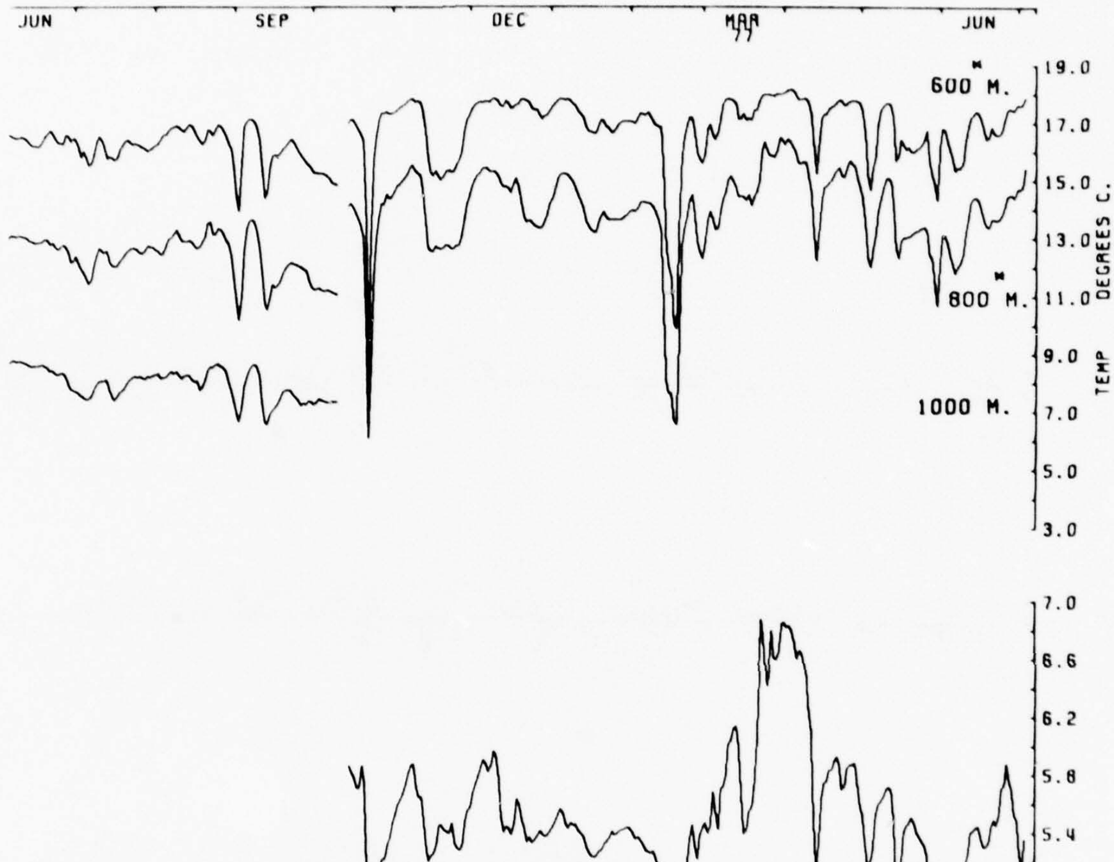



POLYMODE 8 MOORINGS 564 - 577 - 606 CURRENT VECTORS
JUL 76
OCT
JAN 77
APR
E
600 M.
1000 M.
20 CM S-1
1500 M.
4000 M.
JUL 76
OCT
JAN 77
APR

POLYMODE 8 MOORINGS 564 - 577 - 606 TEMPERATURE



POLYMODE 8 CONTINUED TEMPERATURE



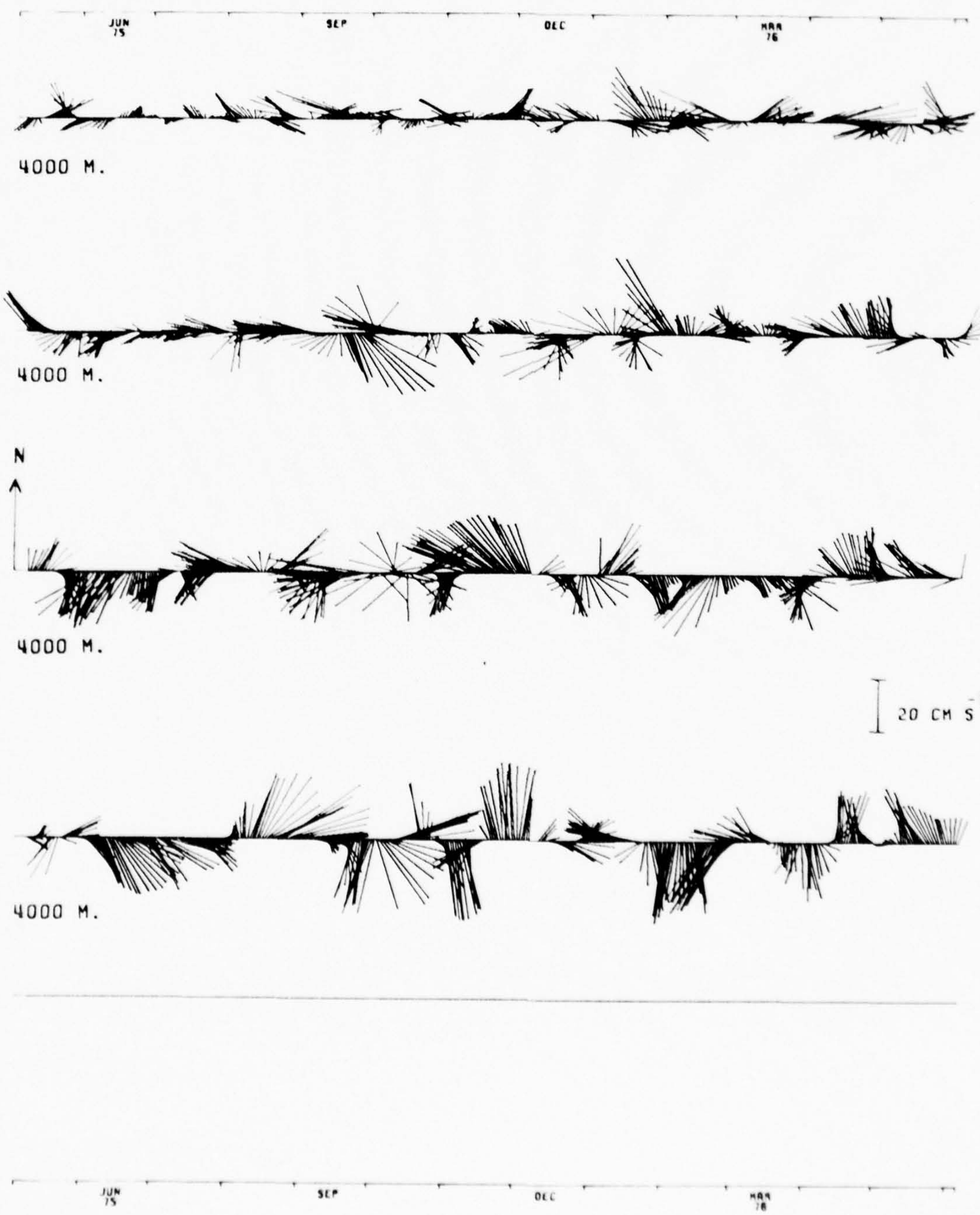
* See Table 2 for corrected depth.

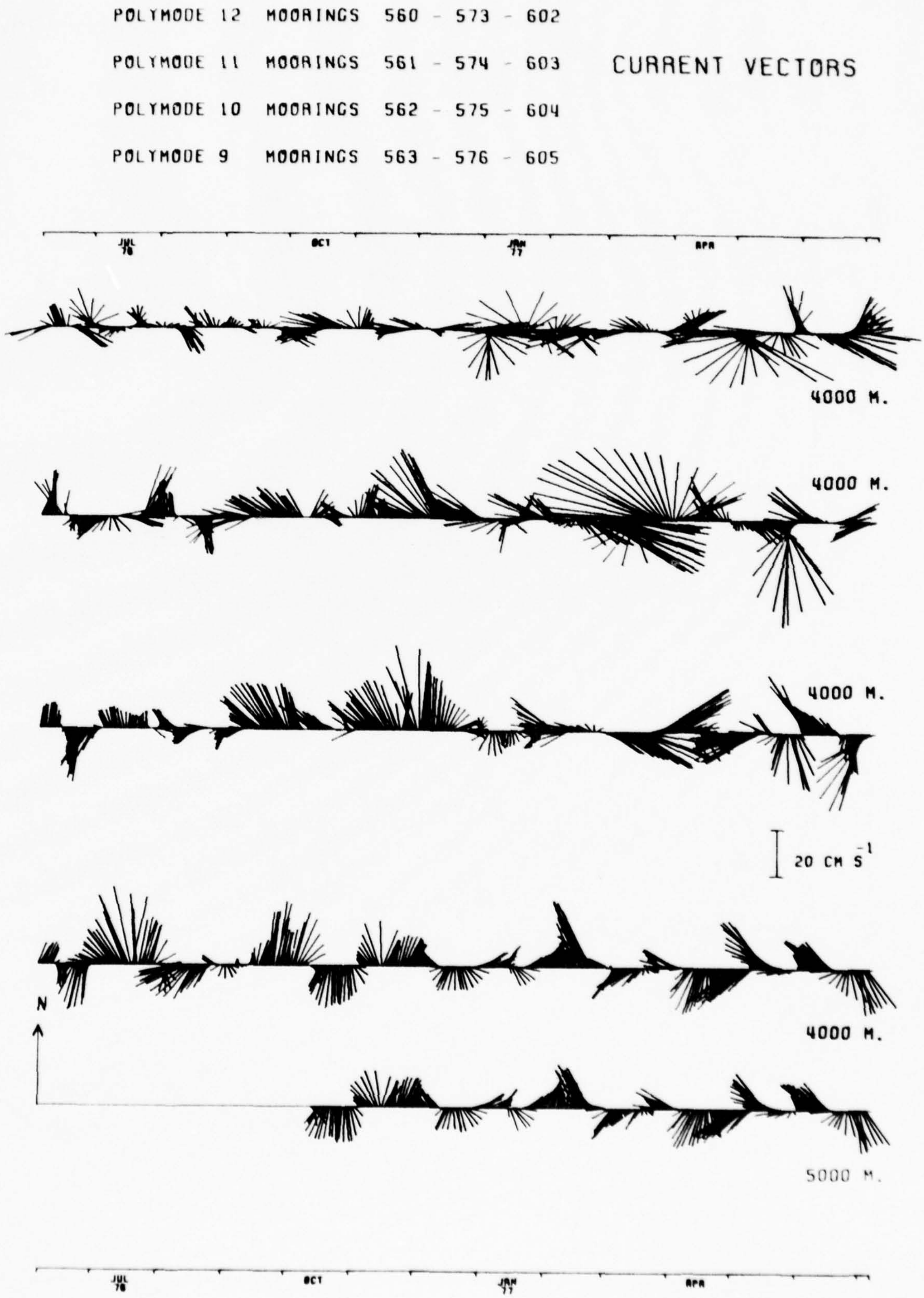
POLYMODE 12 MOORINGS 560 - 573 - 602

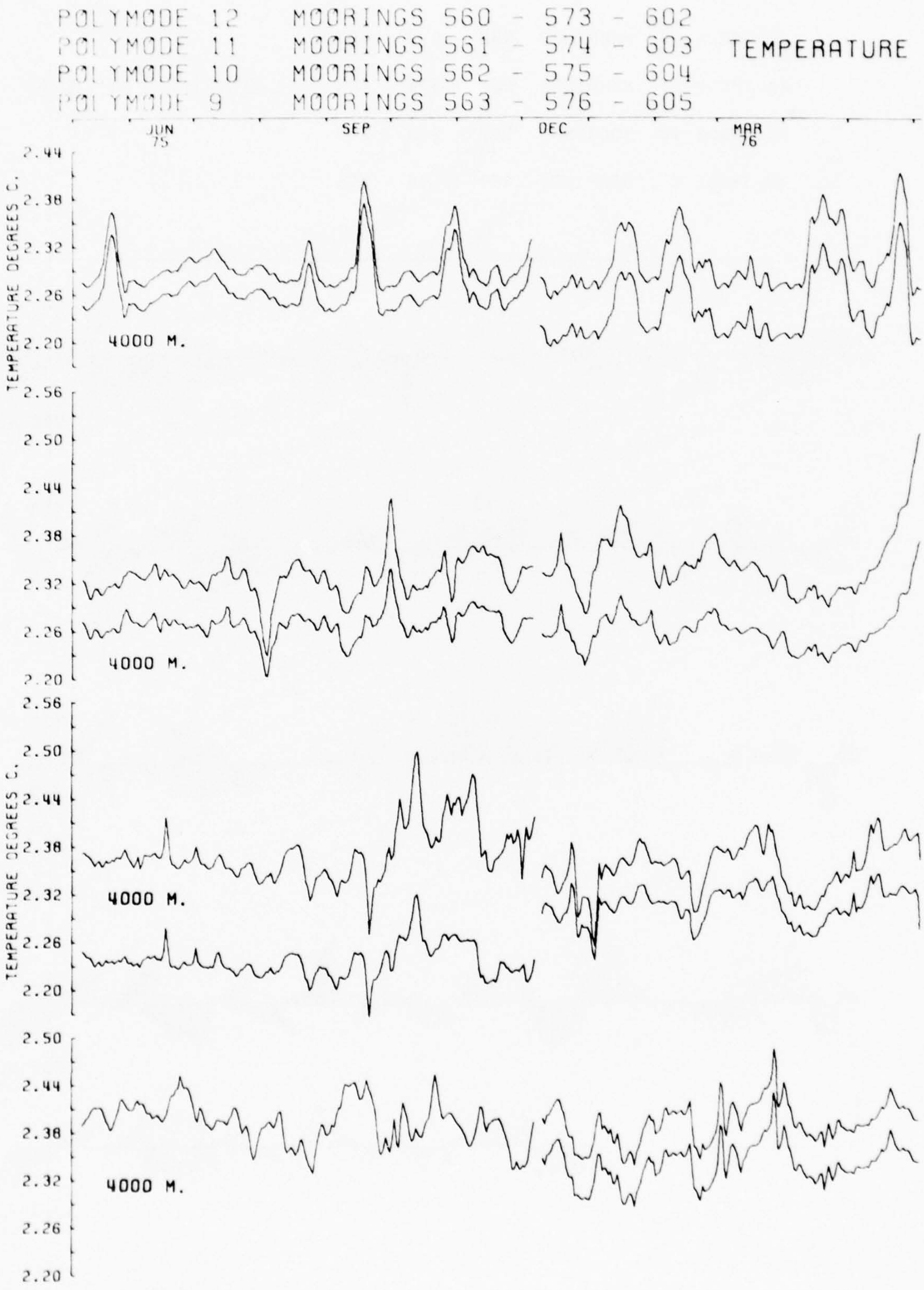
POLYMODE 11 MOORINGS 561 - 574 - 603 CURRENT VECTORS

POLYMODE 10 MOORINGS 562 - 575 - 604

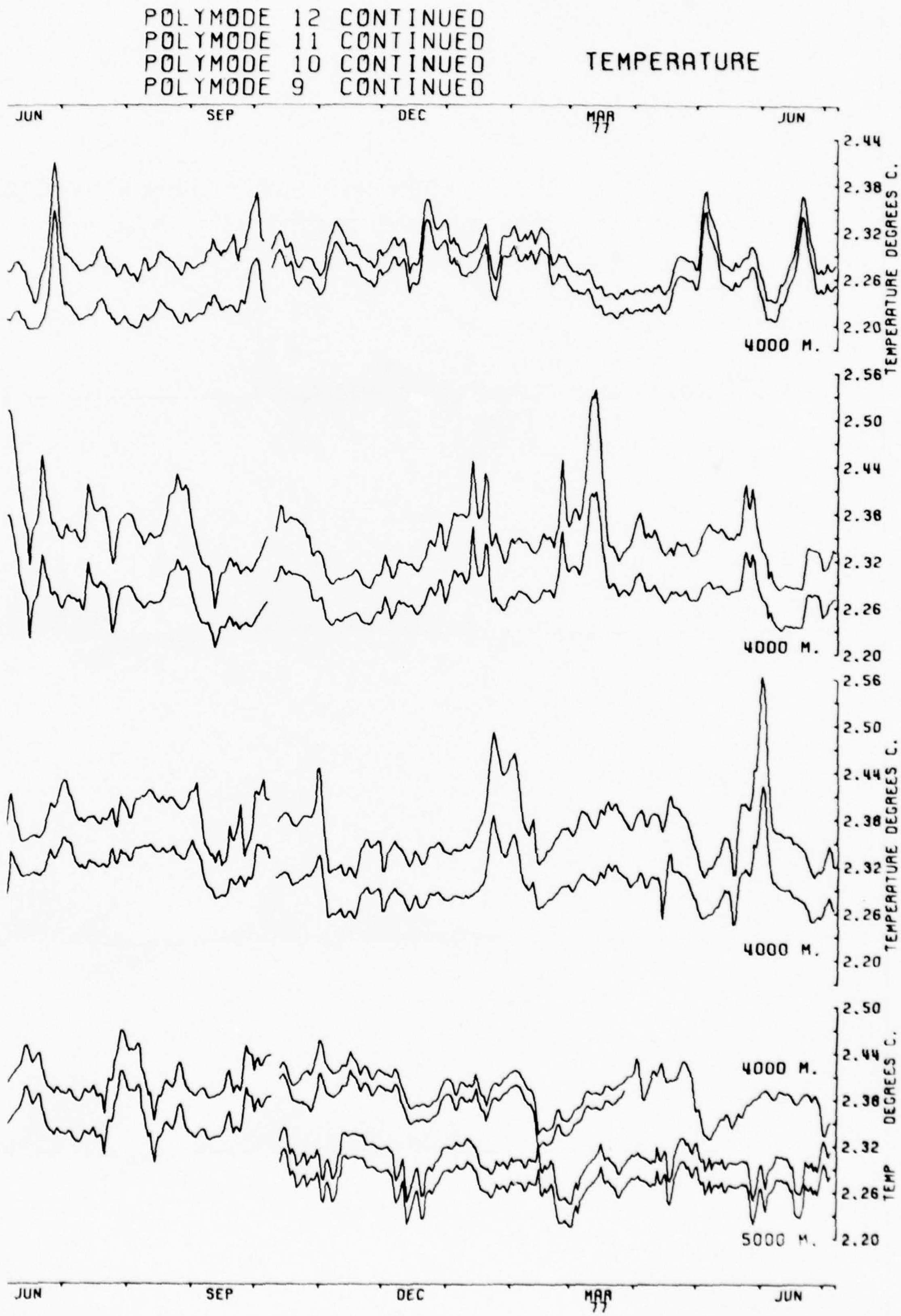
POLYMODE 9 MOORINGS 563 - 576 - 605



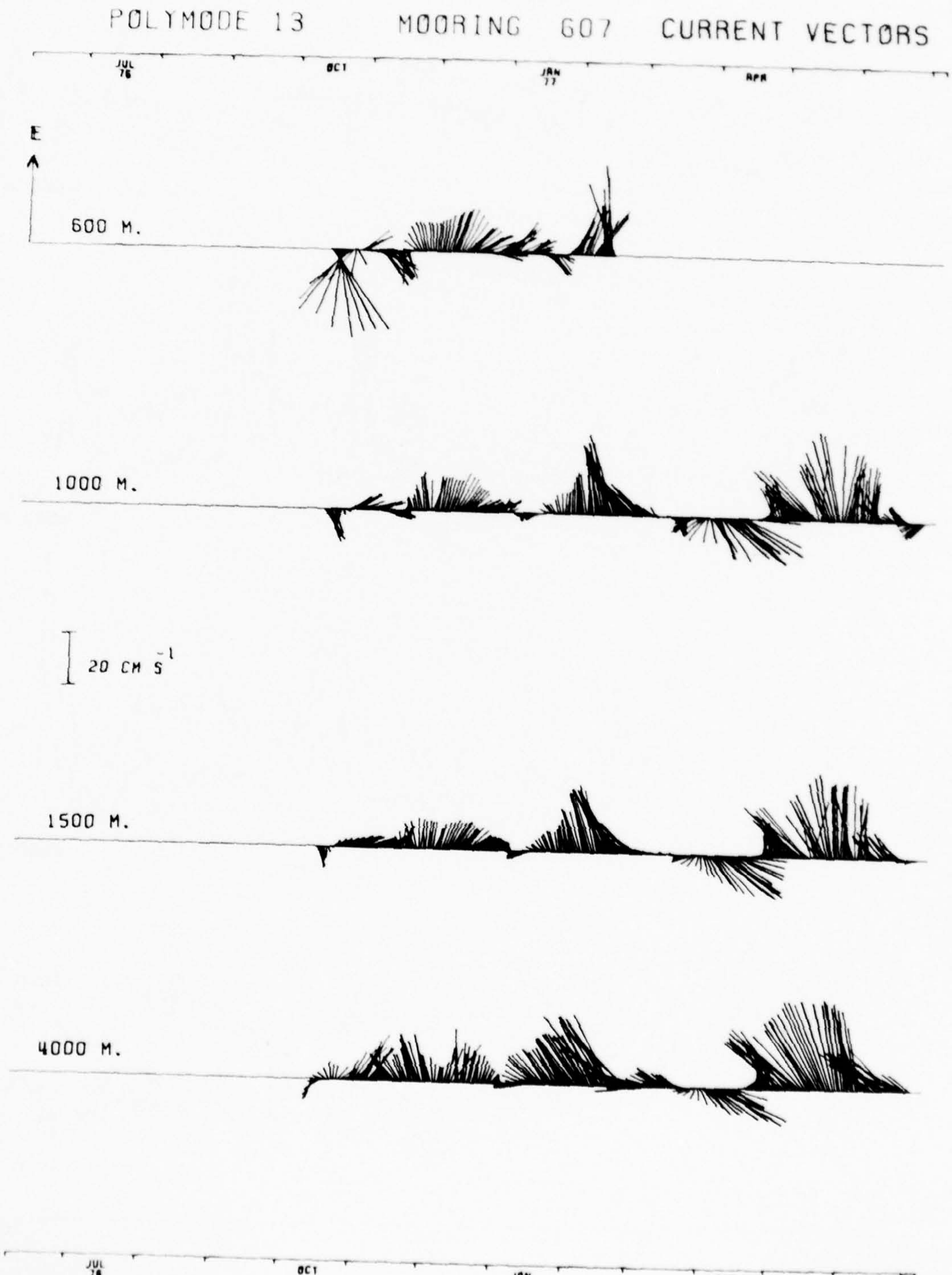

POLYMODE 12 MOORINGS 560 - 573 - 602
POLYMODE 11 MOORINGS 561 - 574 - 603
POLYMODE 10 MOORINGS 562 - 575 - 604
POLYMODE 9 MOORINGS 563 - 576 - 605
CURRENT VECTORS
4000 M.
4000 M.
4000 M.
20 CM S^{-1}
N
4000 M.
5000 M.
OCT
APR



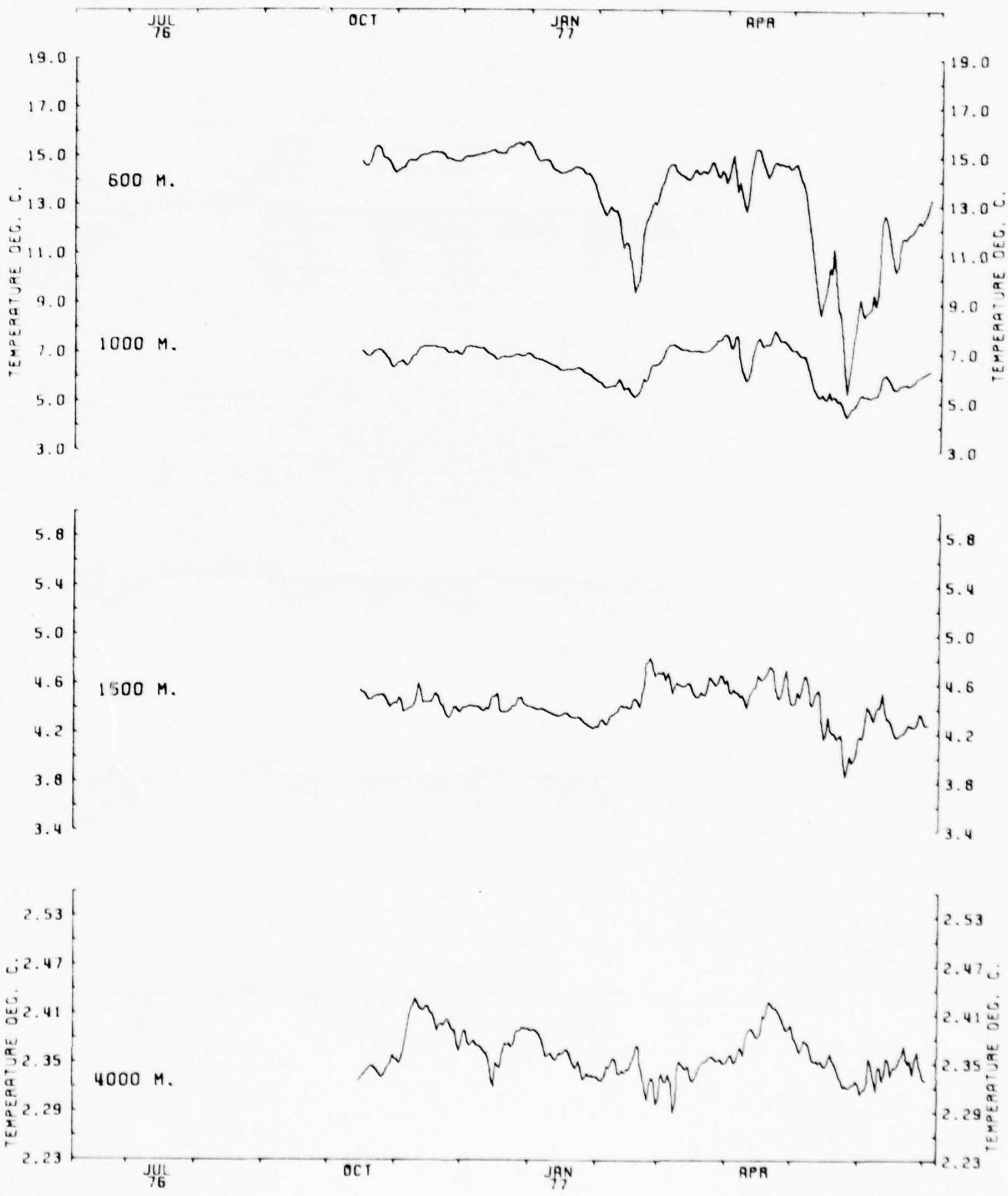
POLYMODE 12 MOORINGS 560 - 573 - 602
POLYMODE 11 MOORINGS 561 - 574 - 603
POLYMODE 10 MOORINGS 562 - 575 - 604
POLYMODE 9 MOORINGS 563 - 576 - 605
TEMPERATURE
JUN 75
SEP
DEC
MAR 76
TEMPERATURE DEGREES C.
2.44
2.38
2.32
2.26
2.20
2.56
2.50
2.50
4000 M.
4000 M.
4000 M.
4000 M.

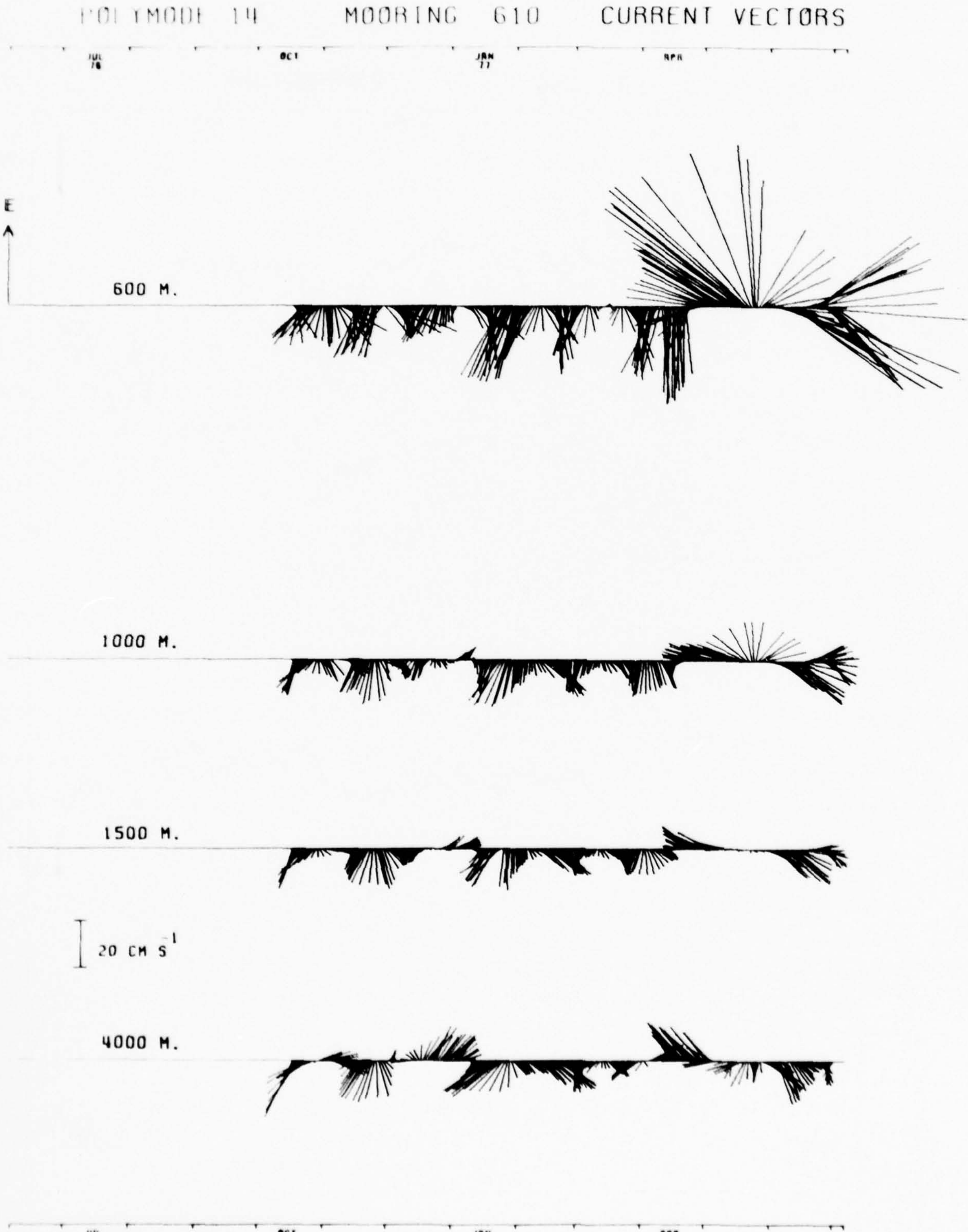


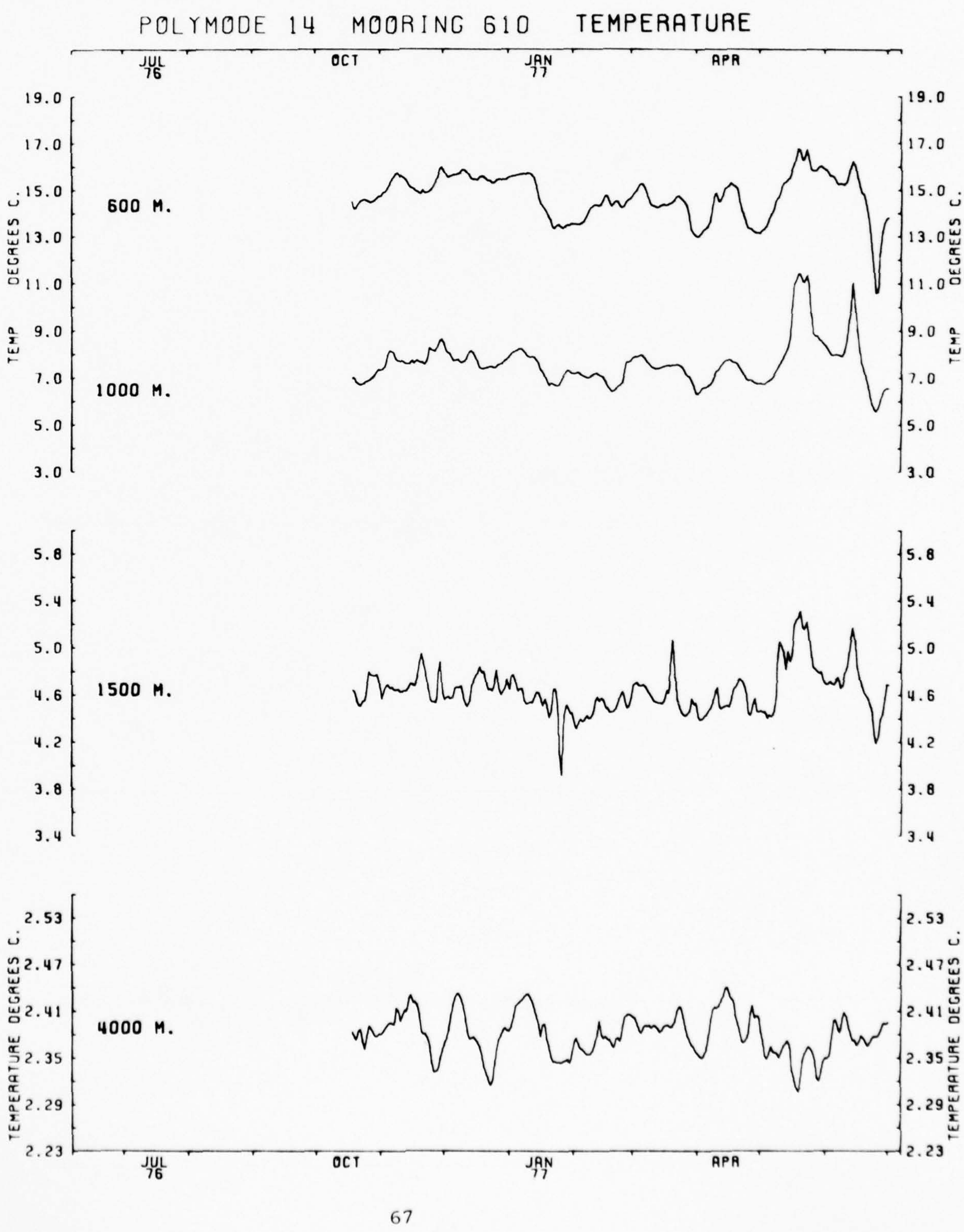
POLYMODE 12 CONTINUED
POLYMODE 11 CONTINUED
POLYMODE 10 CONTINUED
POLYMODE 9 CONTINUED
TEMPERATURE
JUN
SEP
DEC
MAR
77
JUN
2.44
2.38
2.32
2.26
2.20
4000 M.
TEMPERATURE DEGREES C.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
4000 M.
2.56
2.50
2.44
2.38
2.32
2.26
2.20
4000 M.
TEMPERATURE DEGREES C.
2.50
2.44
2.38
2.32
2.26
2.20
4000 M.
5000 M.
TEMP DEGREES C.
JUN
SEP
DEC
MAR
77
JUN


POLYMODE 13 MOORING 607 CURRENT VECTORS
JUL 76
OCT
JAN 77
APR
E
600 M.
1000 M.
20 CM S^{-1}
1500 M.
4000 M.
JUL 76
OCT
JAN 77
APR

POLYMODE 13 MOORING 607 TEMPERATURE

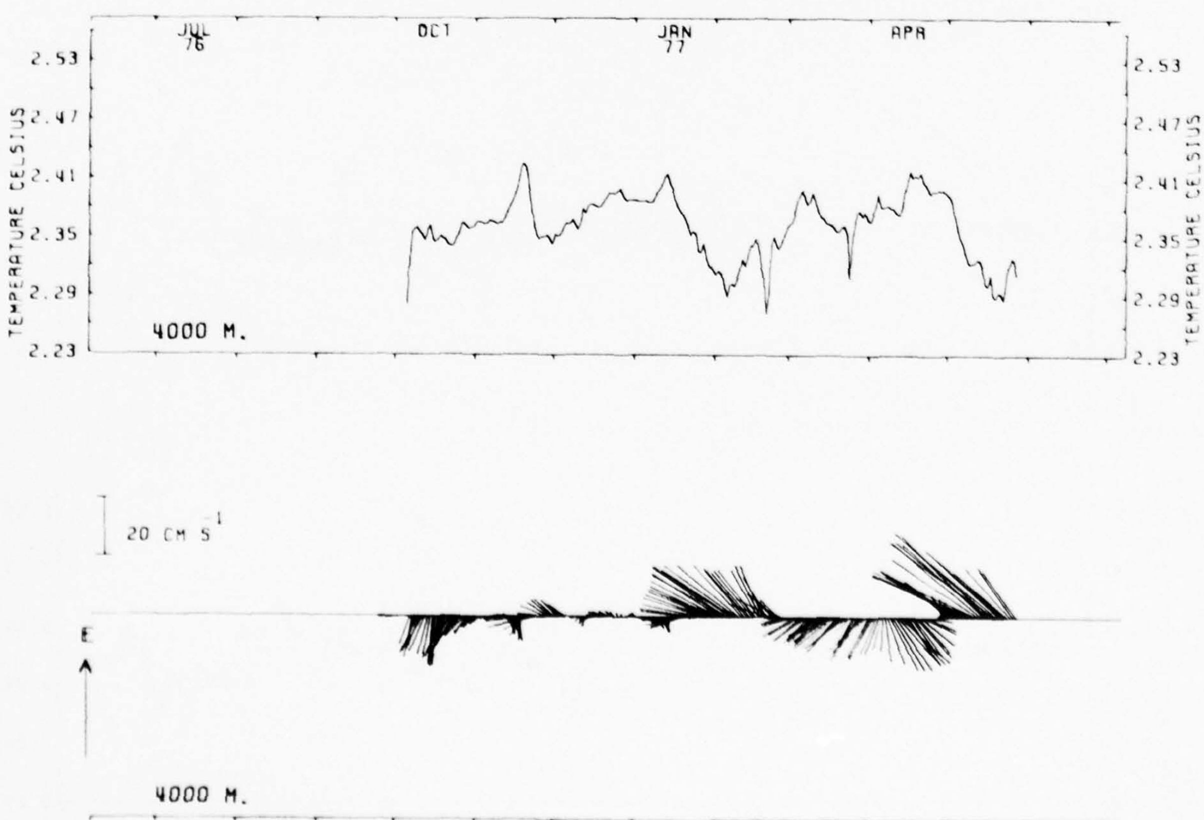



POLYMODE 14 MOORING 610 CURRENT VECTORS
JUL 76
OCT
JAN 77
APR
E
600 M.
1000 M.
1500 M.
20 CM S-1
4000 M.
JUL 76
OCT
JAN 77
APR

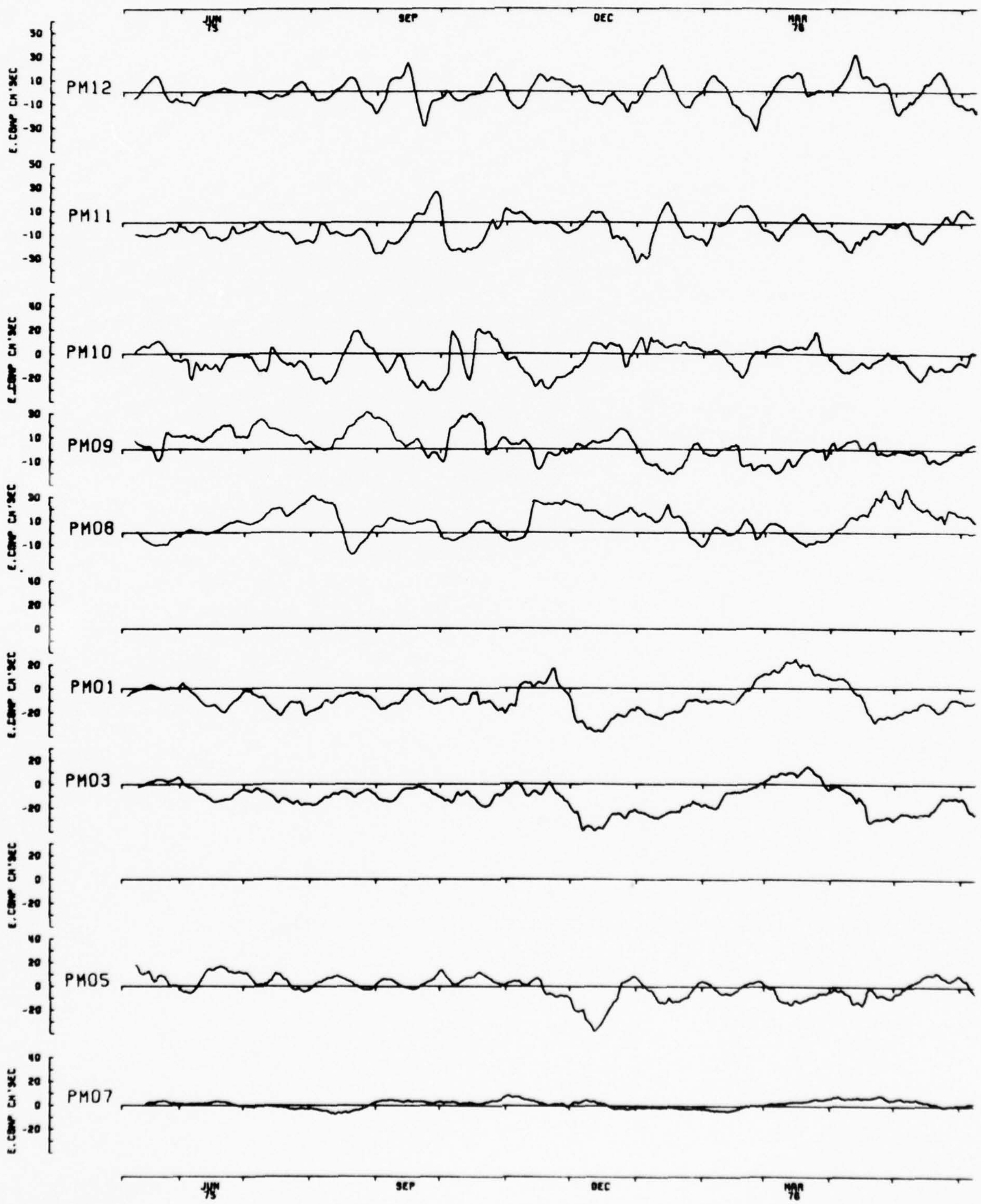


POLYMODE 14 MOORING 610 TEMPERATURE
JUL 76
OCT
JAN 77
APR
TEMP DEGREES C.
19.0
17.0
15.0
13.0
11.0
9.0
7.0
5.0
3.0
600 M.
1000 M.
5.8
5.4
5.0
4.6
4.2
3.8
3.4
1500 M.
TEMPERATURE DEGREES C.
2.53
2.47
2.41
2.35
2.29
2.23
4000 M.

POLYMODE 15 MOORING 599



EAST COMPONENTS (RECORDS AT 4000 M., DOWN 55°W.)



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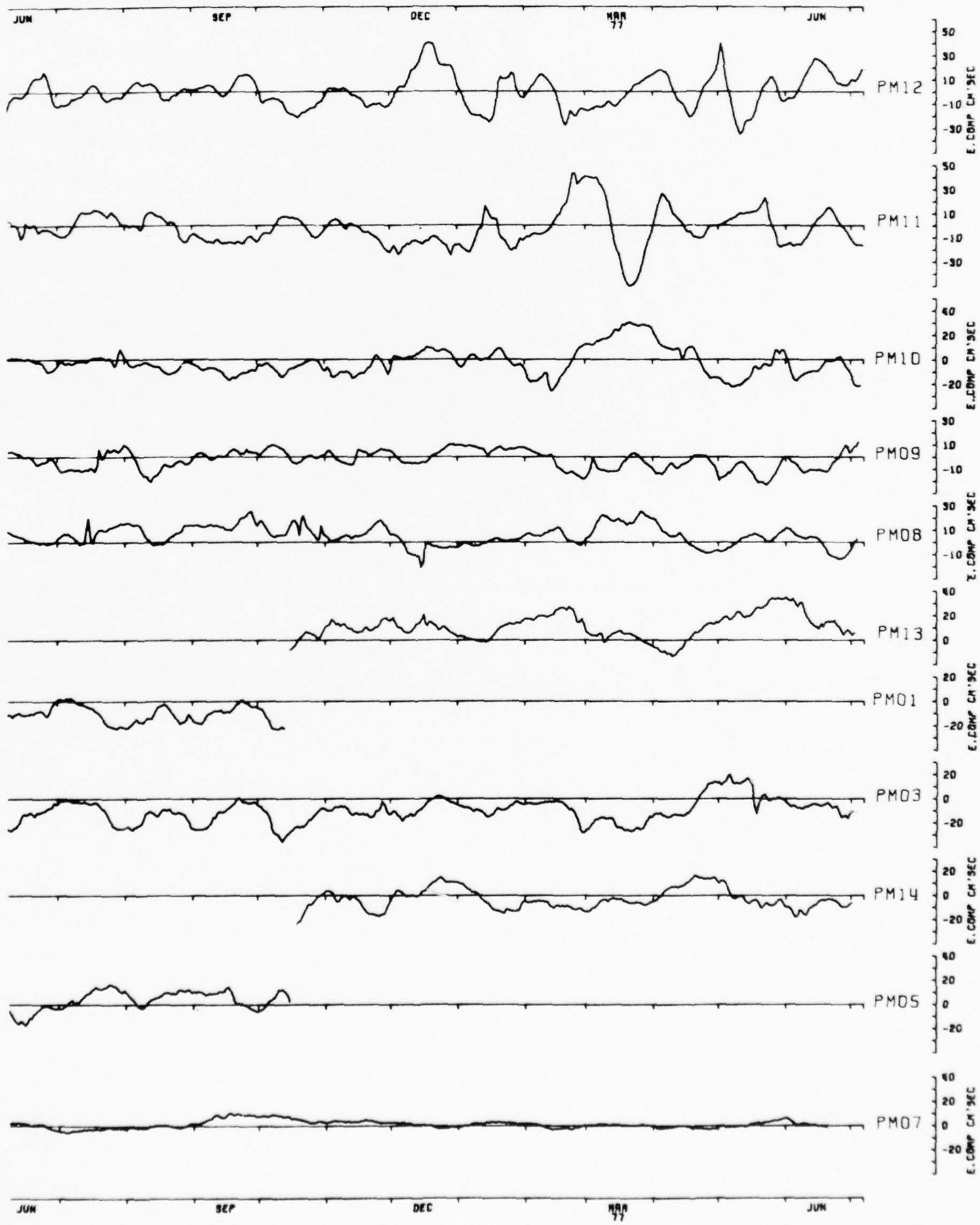
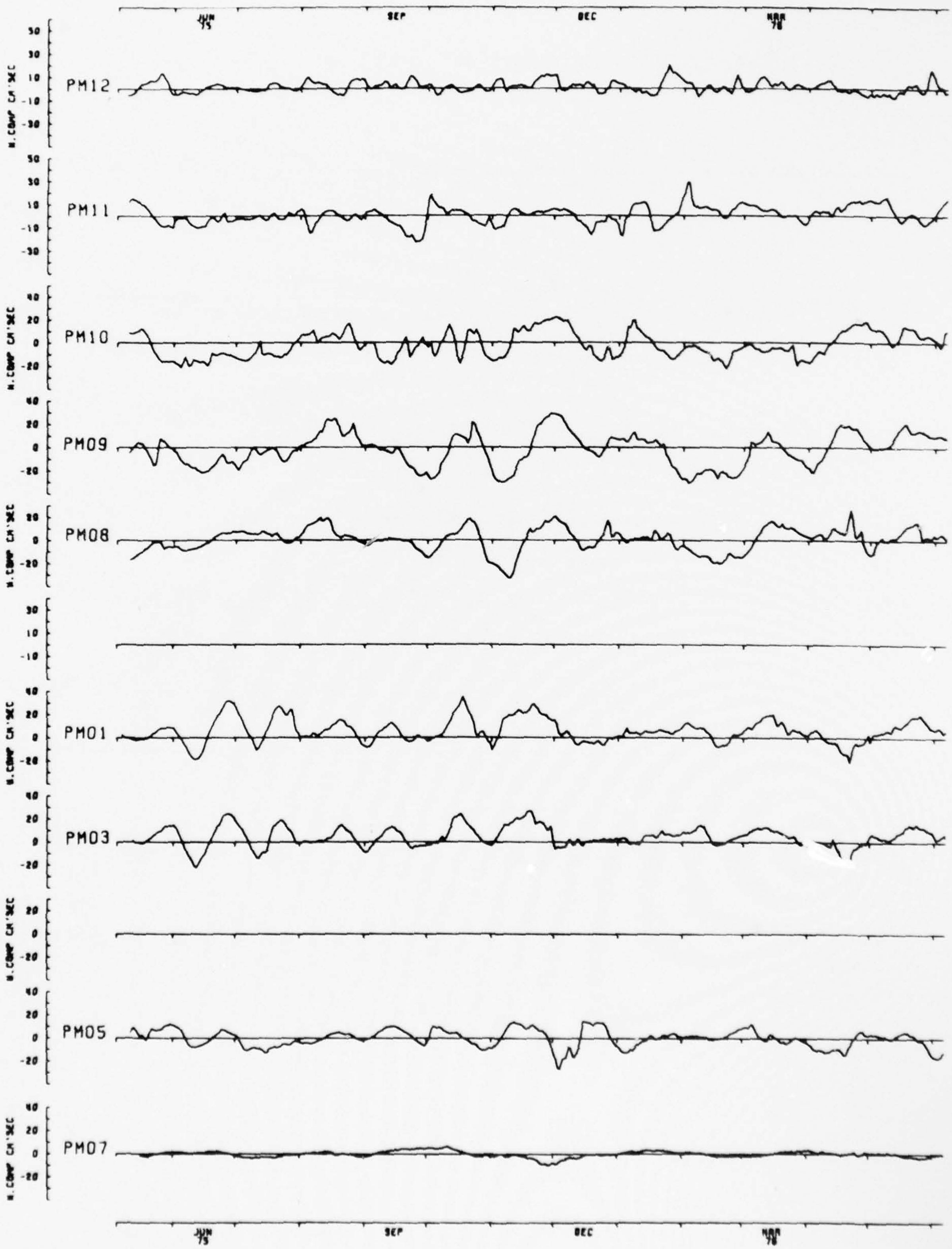
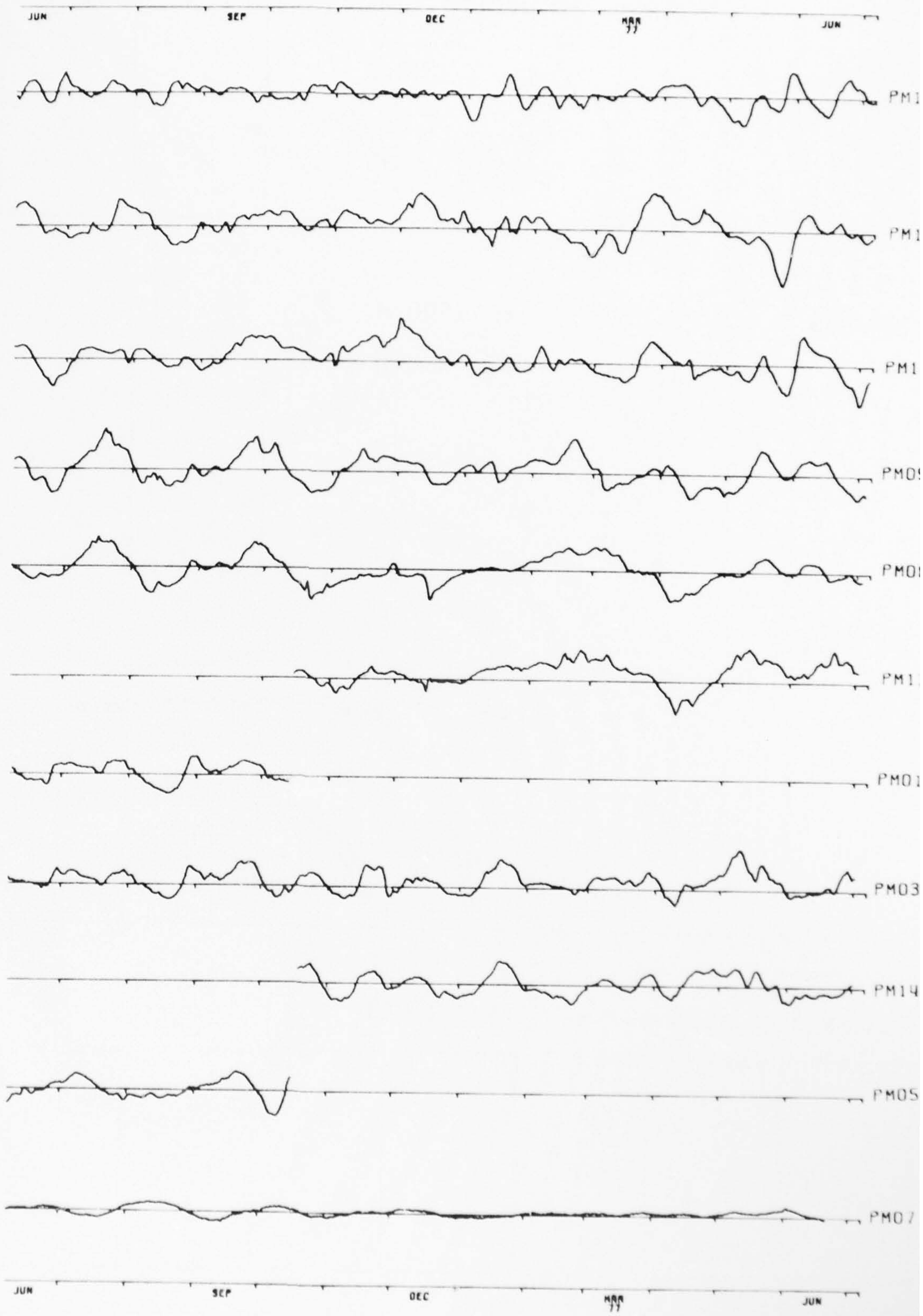
EAST COMPONENTS (RECORDS AT 4000 M., DOWN 55° W.)



NORTH COMPONENTS (RECORDS AT 4000 M., DOWN 55°W.)



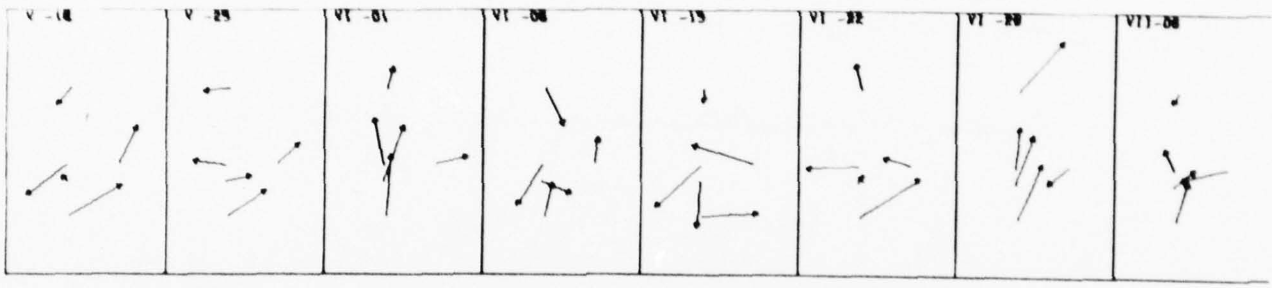
NORTH COMPONENTS (RECORDS AT 4000 M., DOWN 55°W.)



1975

V -18	V -25	VI -01	VI -08	VI -15	VI -22	VI -29	VII-06

MOORINGS 1,2,3,4,5,8 AT 600 M



0 100 KM 0 400 MM/S

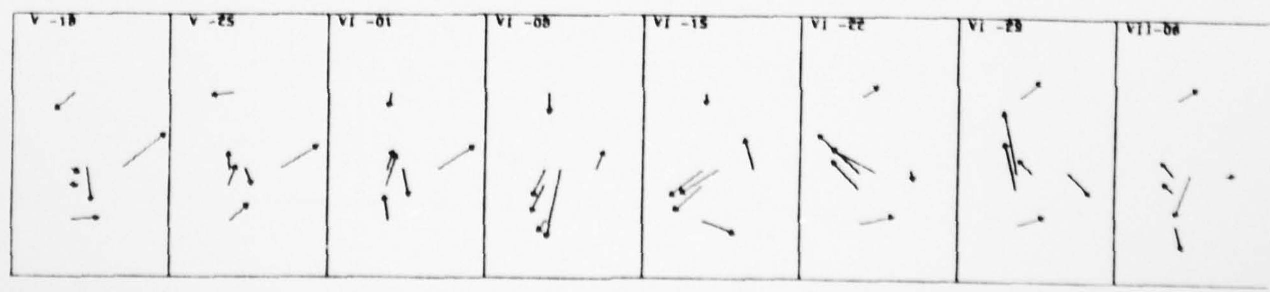
MOORINGS 1,2,3,4,5,8 AT 1000 M

0 100 KM 0 400 MM/S

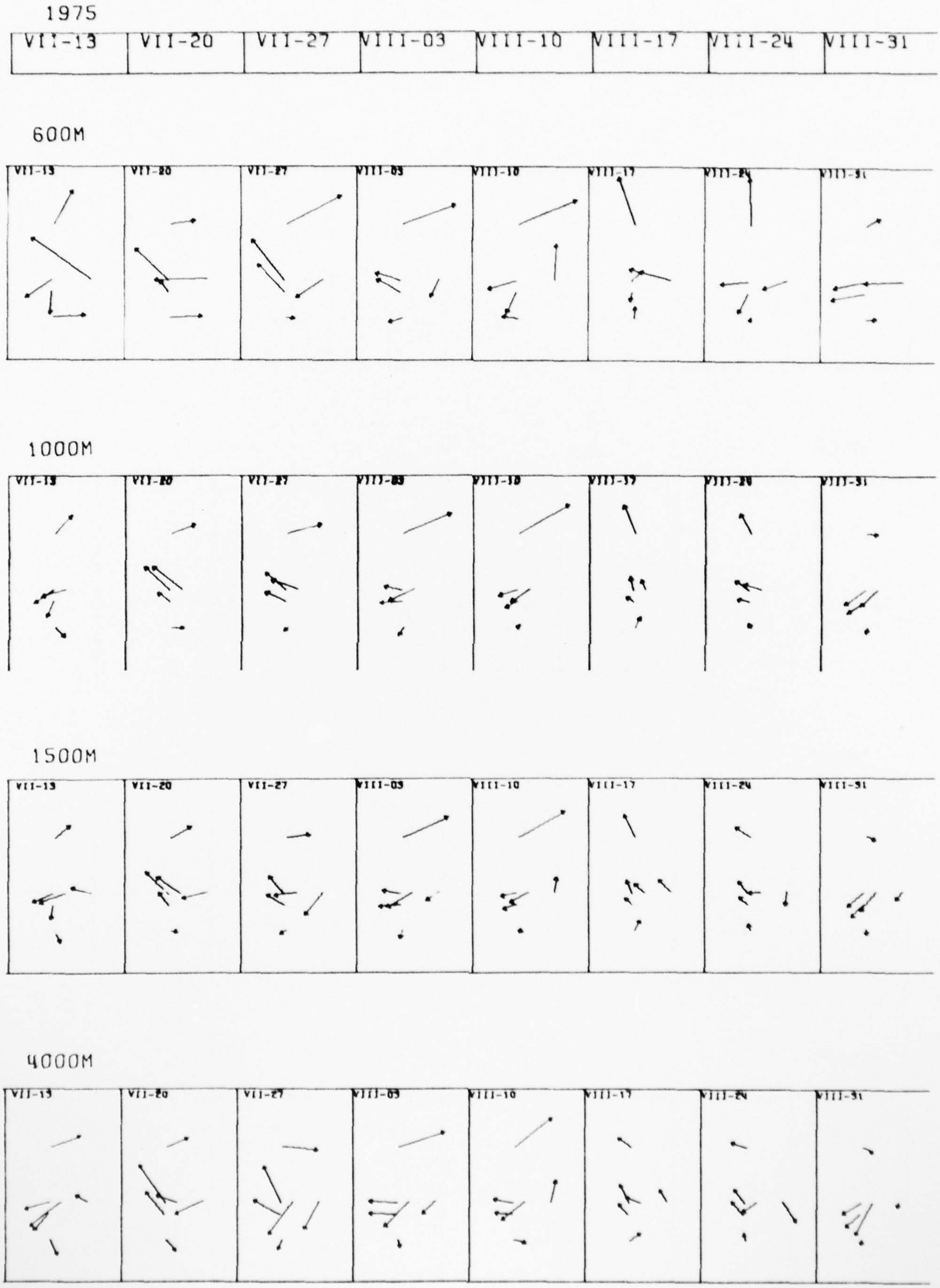
MOORINGS 1,2,3,4,5,8 AT 1500M

0 100 KM 0 400 MM/S

MOORINGS 1.2.3.4.5.8 AT 4000 M



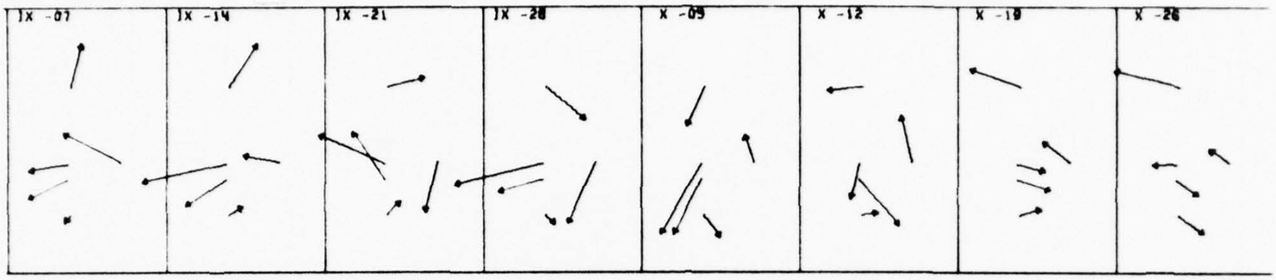
0 100 KM 0 400 MM/S


1975
VII-13
VII-20
VII-27
VIII-03
VIII-10
VIII-17
VIII-24
VIII-31
600M
1000M
1500M
4000M

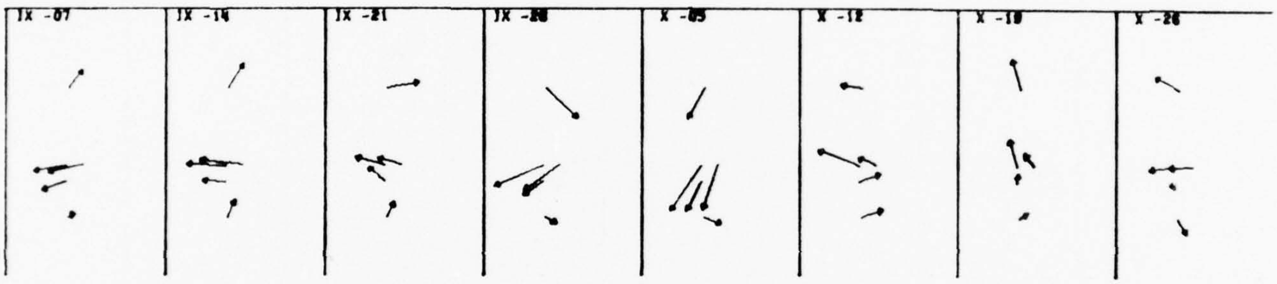
1975

IX -07	IX -14	IX -21	IX -28	X -05	X -12	X -19	X -26

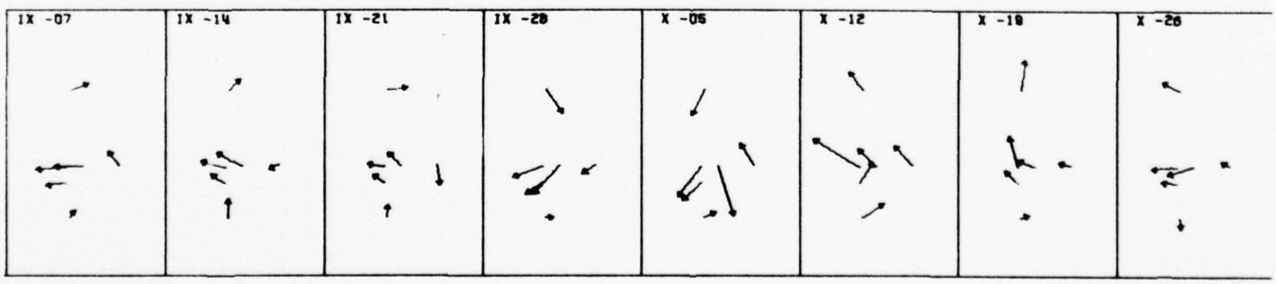
600M



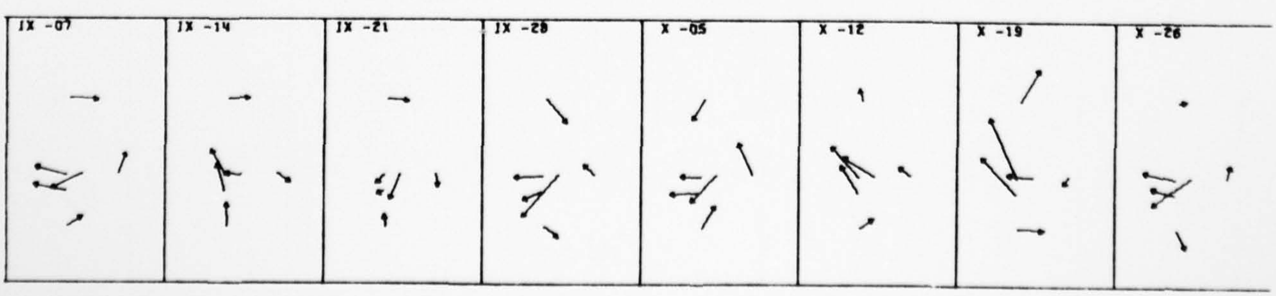
1000M



1500M



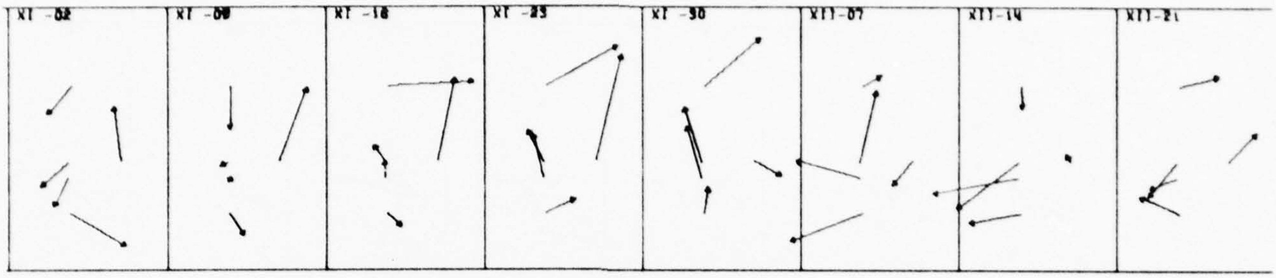
4000M



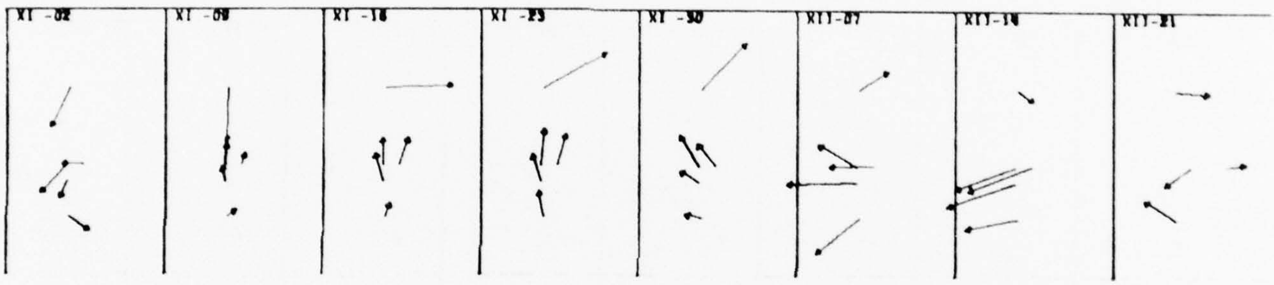
1973

XI -02	XI -09	XI -16	XI -23	XI -30	XII-07	XII-14	XII-21

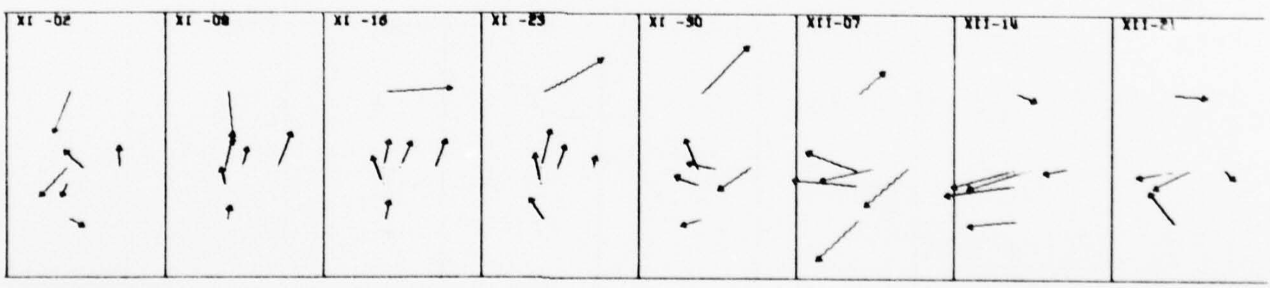
MOORINGS 1,2,3,4,5,8 AT 600 M



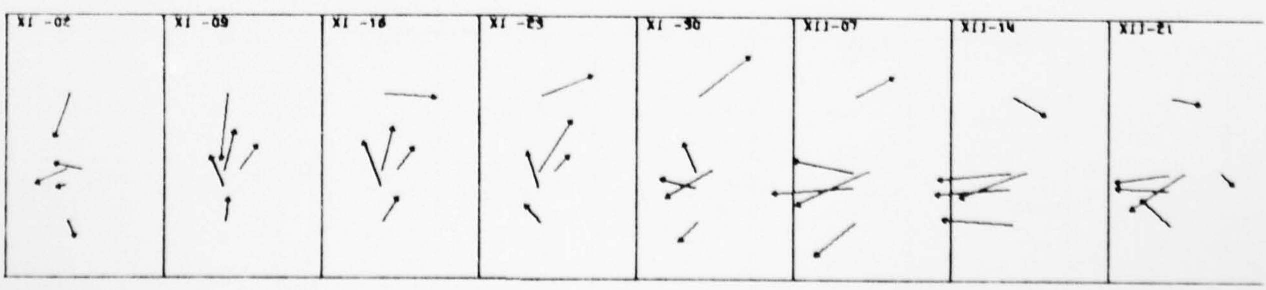
MOORINGS 1,2,3,4,5,8 AT 1000 M

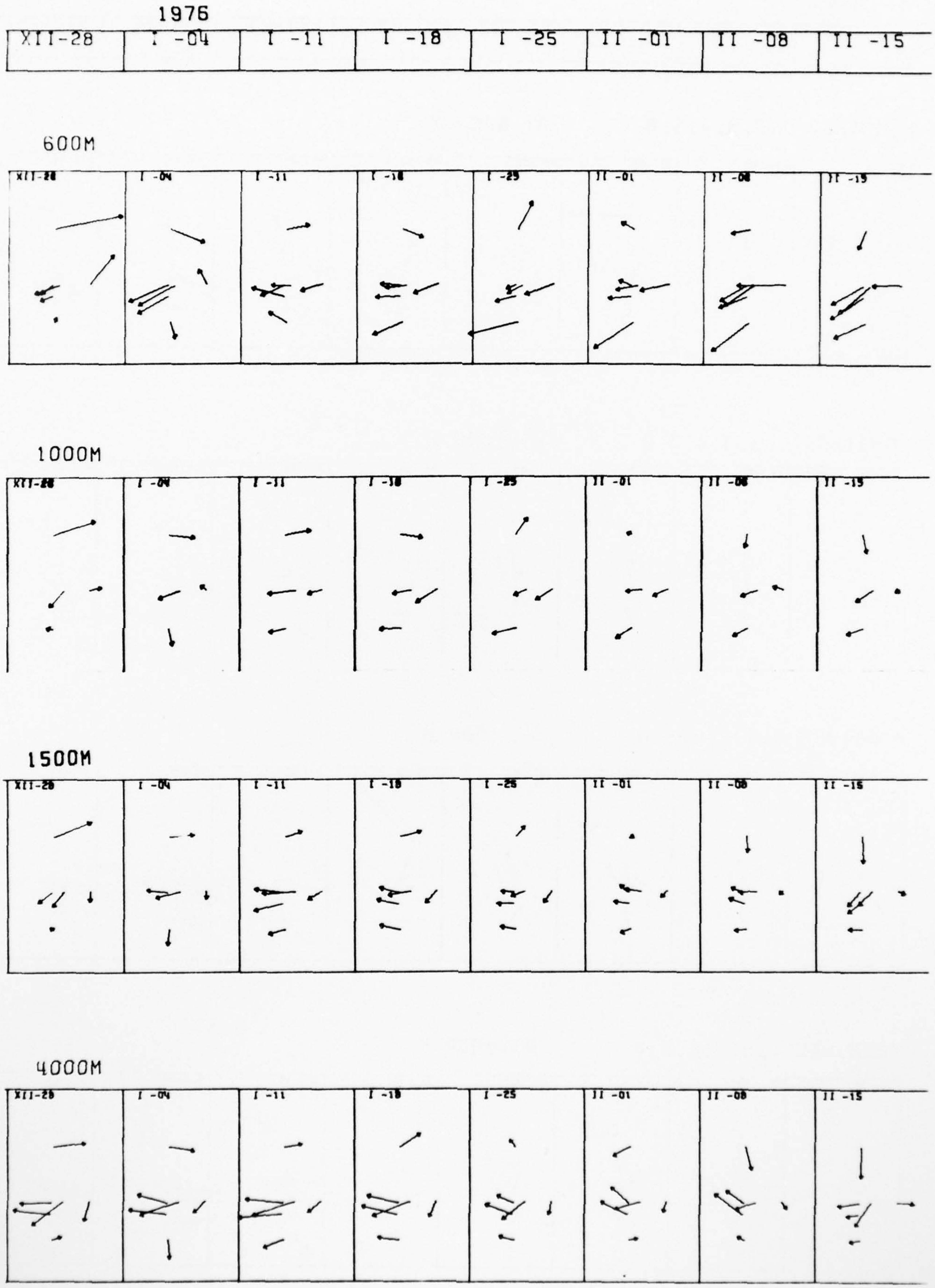


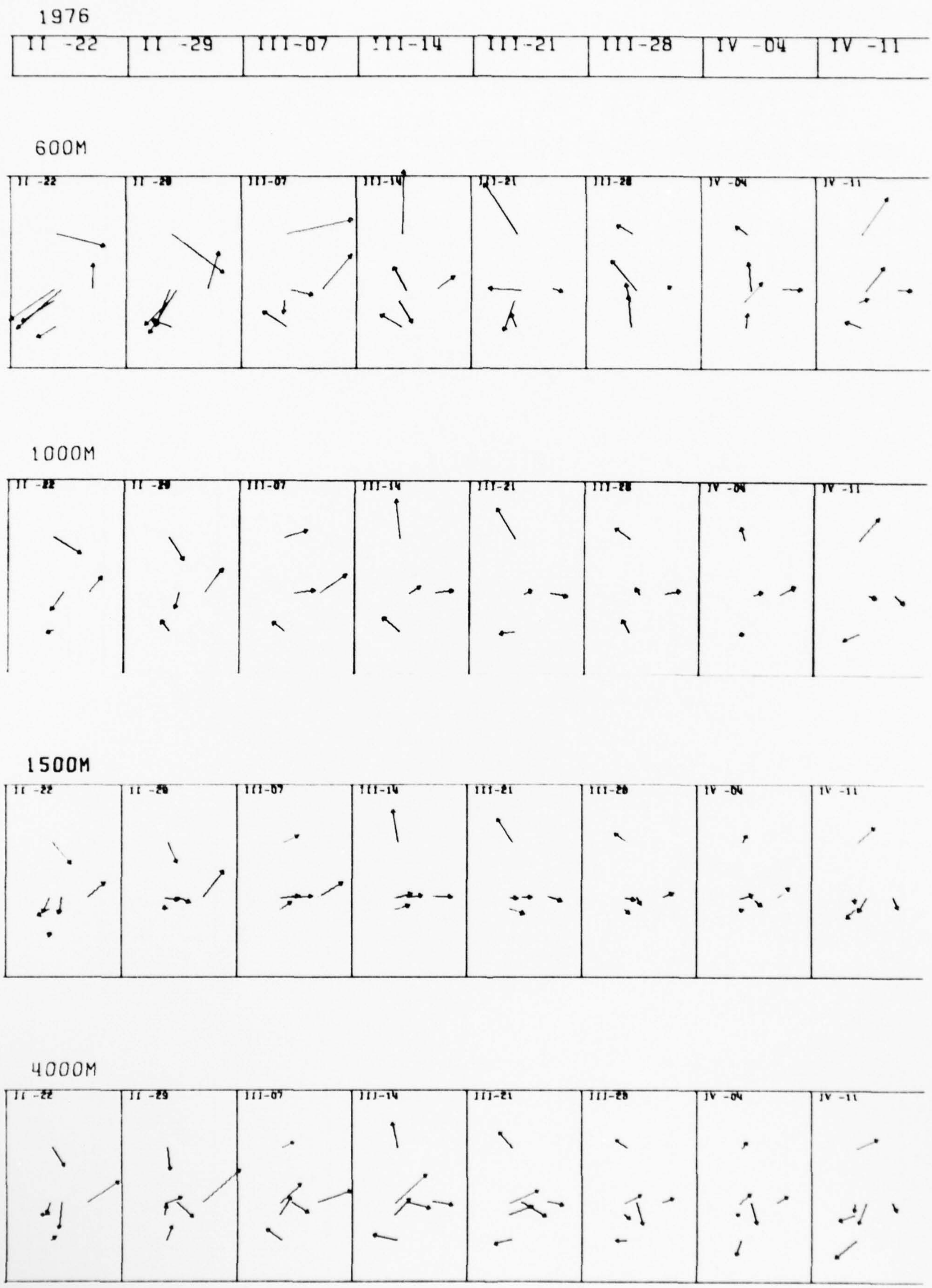
MOORINGS 1,2,3,4,5,8 AT 1500 M



MOORINGS 1,2,3,4,5,8 AT 4000 M



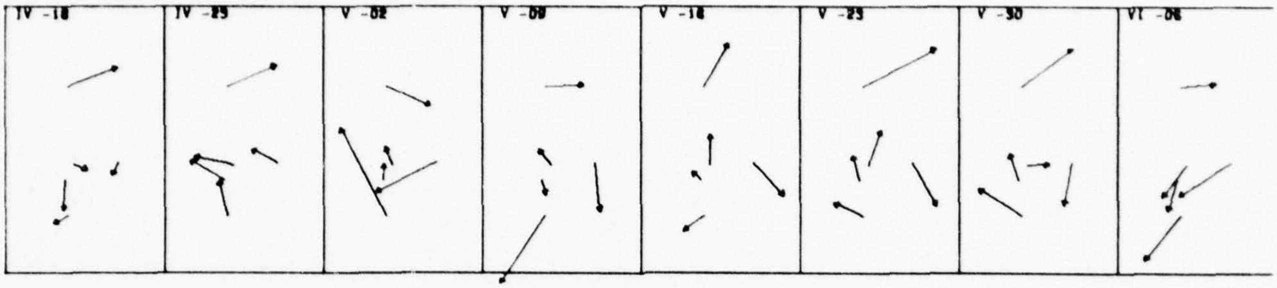

1976
XII-28
I -04
I -11
I -18
I -25
II -01
II -08
II -15
600M
1000M
1500M
4000M


1976
II -22
II -29
III-07
III-14
III-21
III-28
IV -04
IV -11
600M
1000M
1500M
4000M

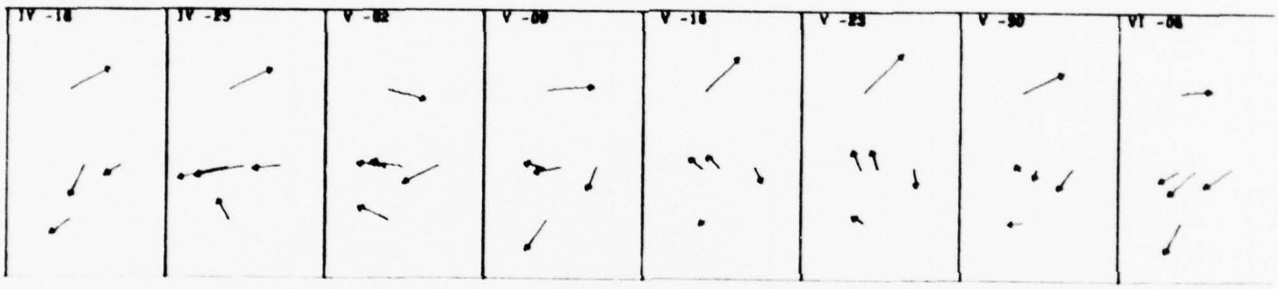
1976

IV -18	IV -25	V -02	V -09	V -16	V -23	V -30	VI -06

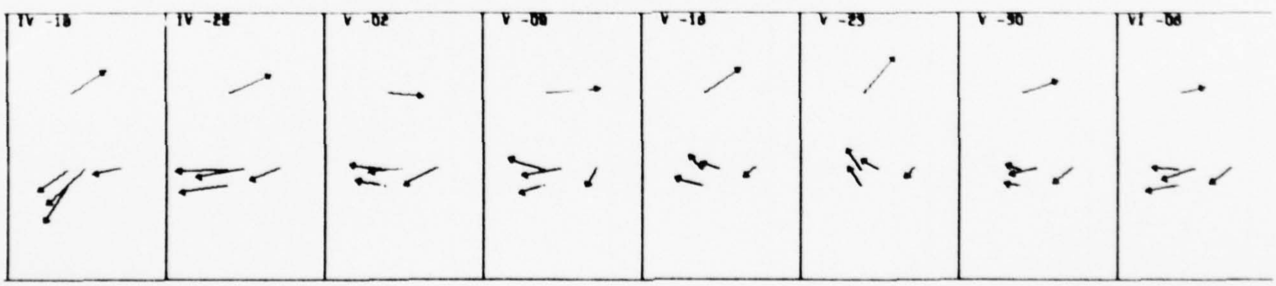
MOORINGS 1,2,3,4,5,8 AT 600 M



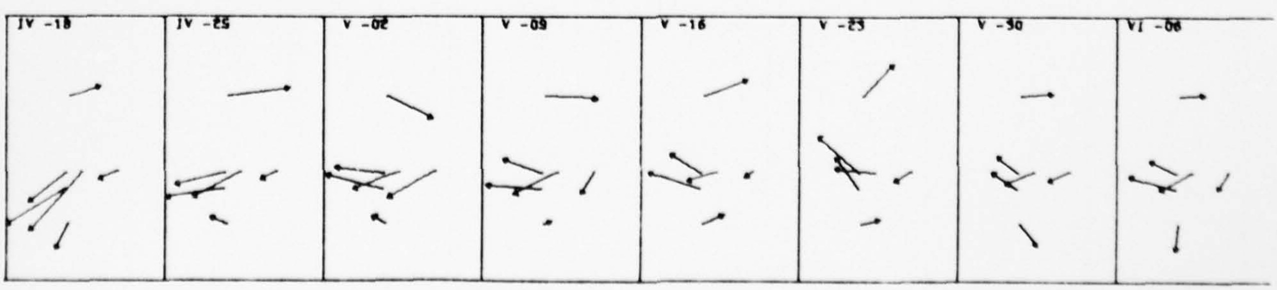
MOORINGS 1,2,3,4,5,8 AT 1000 M

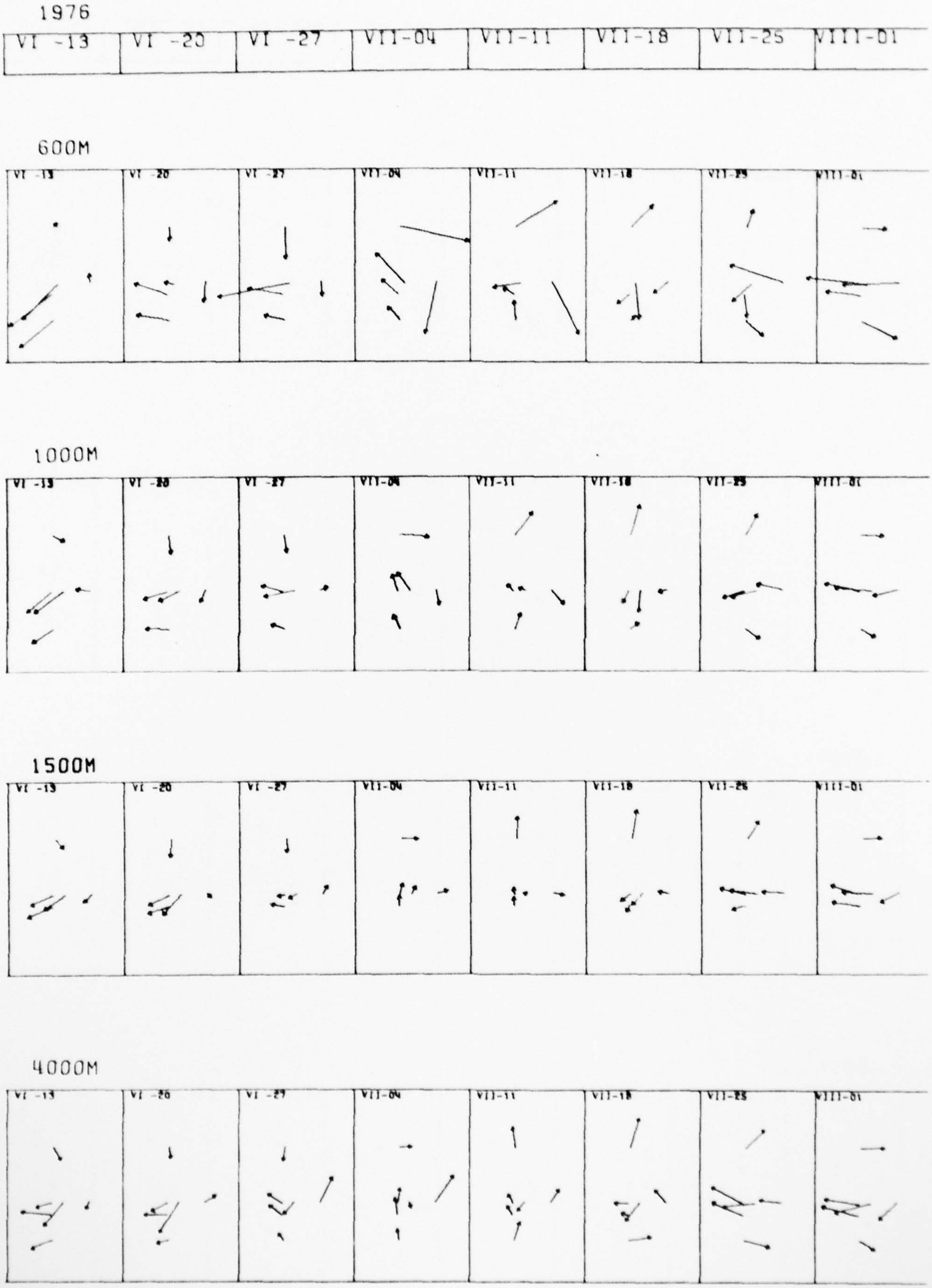


MOORINGS 1,2,3,4,5,8 AT 1500M



MOORINGS 1,2,3,4,5,8 AT 4000 M

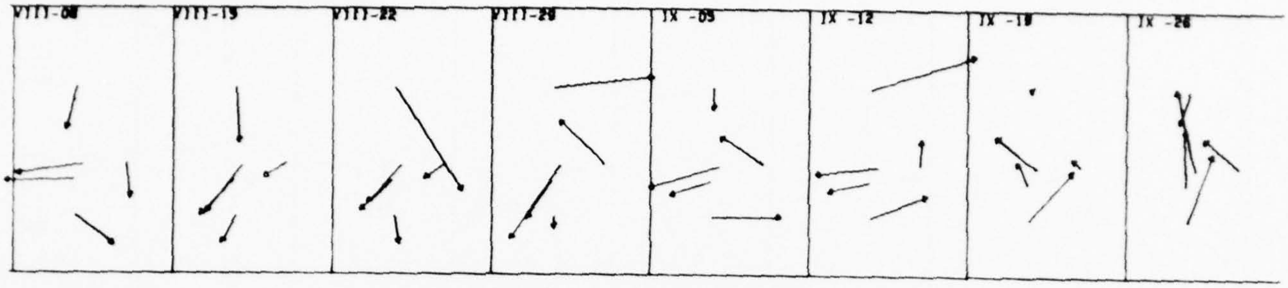



1976
VI -13
VI -20
VI -27
VII-04
VII-11
VII-18
VII-25
VIII-01
600M
1000M
1500M
4000M

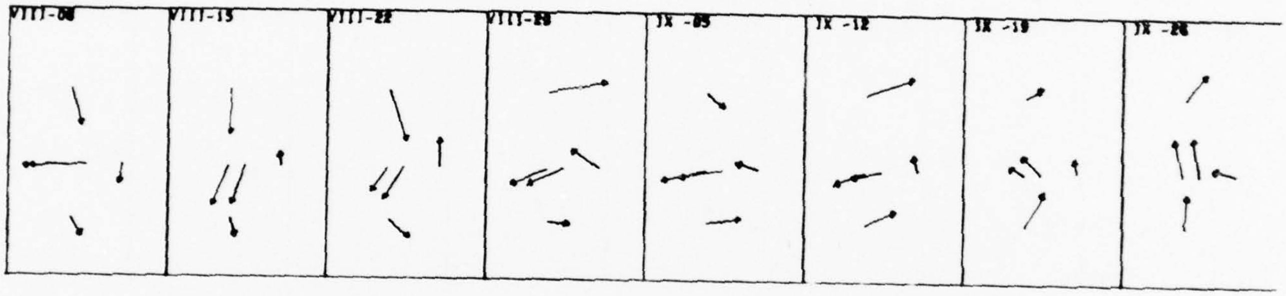
1976

VIII-08	VIII-15	VIII-22	VIII-29	IX -05	IX -12	IX -19	IX -26

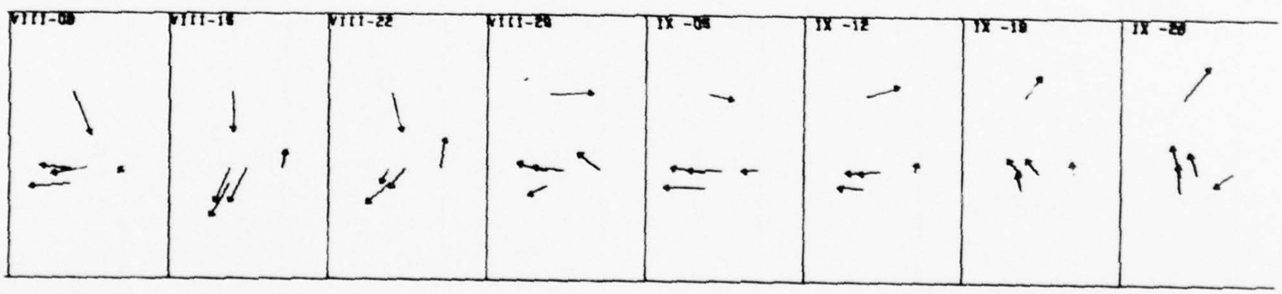
600 M



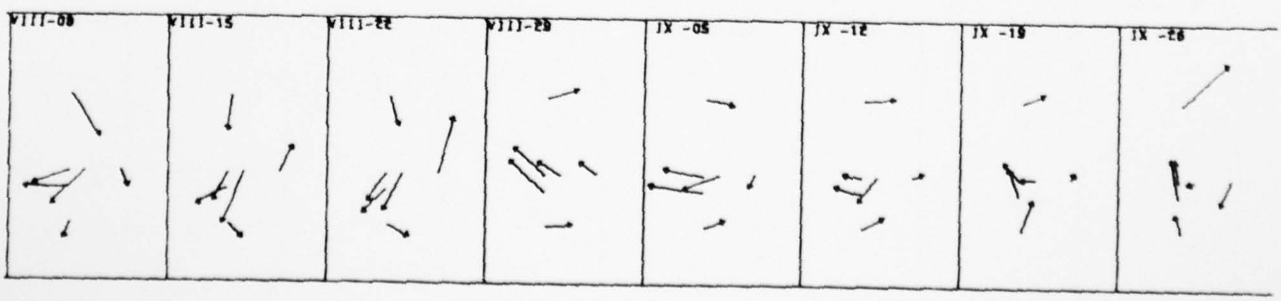
1000M



1500M



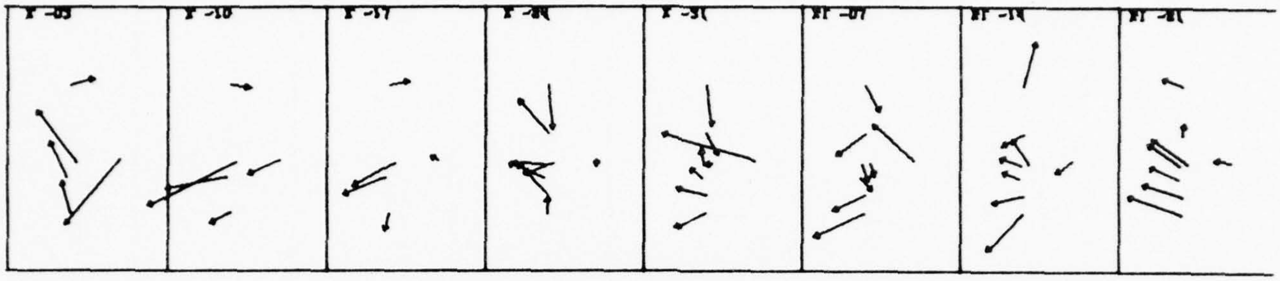
4000M



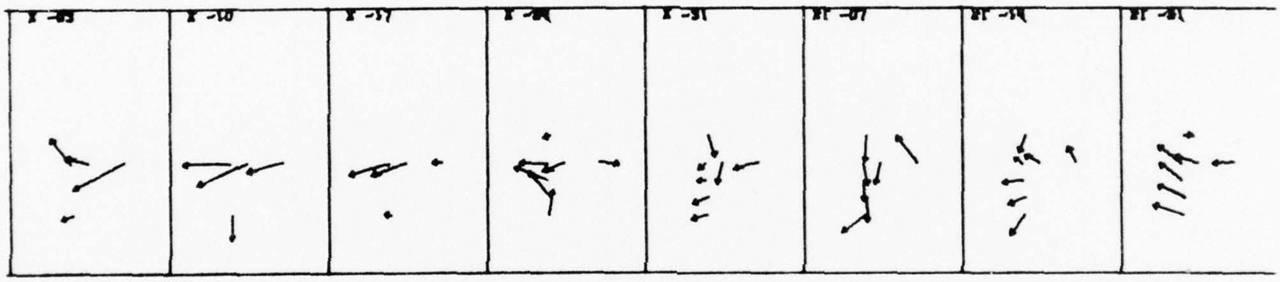
1976

X -03	X -10	X -17	X -24	X -31	XI -07	XI -14	XI -21

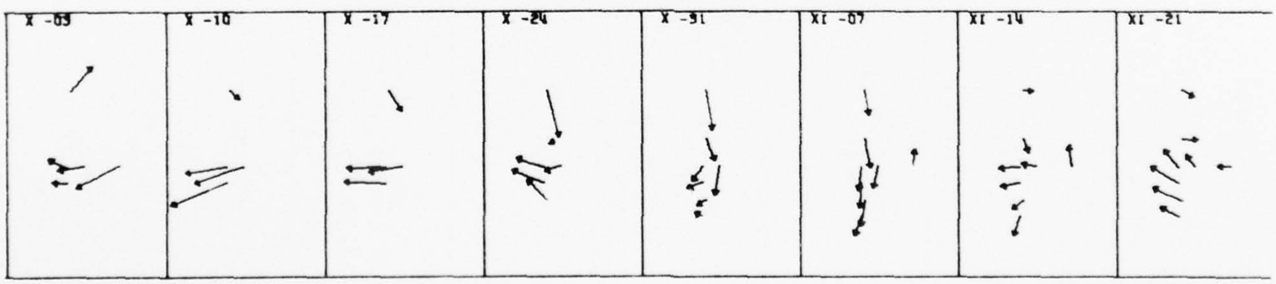
MOORINGS 1,2,3,4,5,8,13,14 AT 600 M



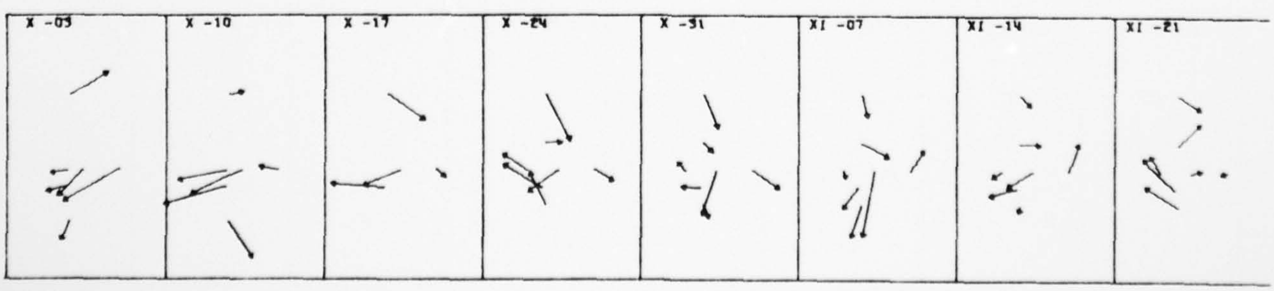
MOORINGS 1,2,3,4,5,8,13,14 AT 1000 M

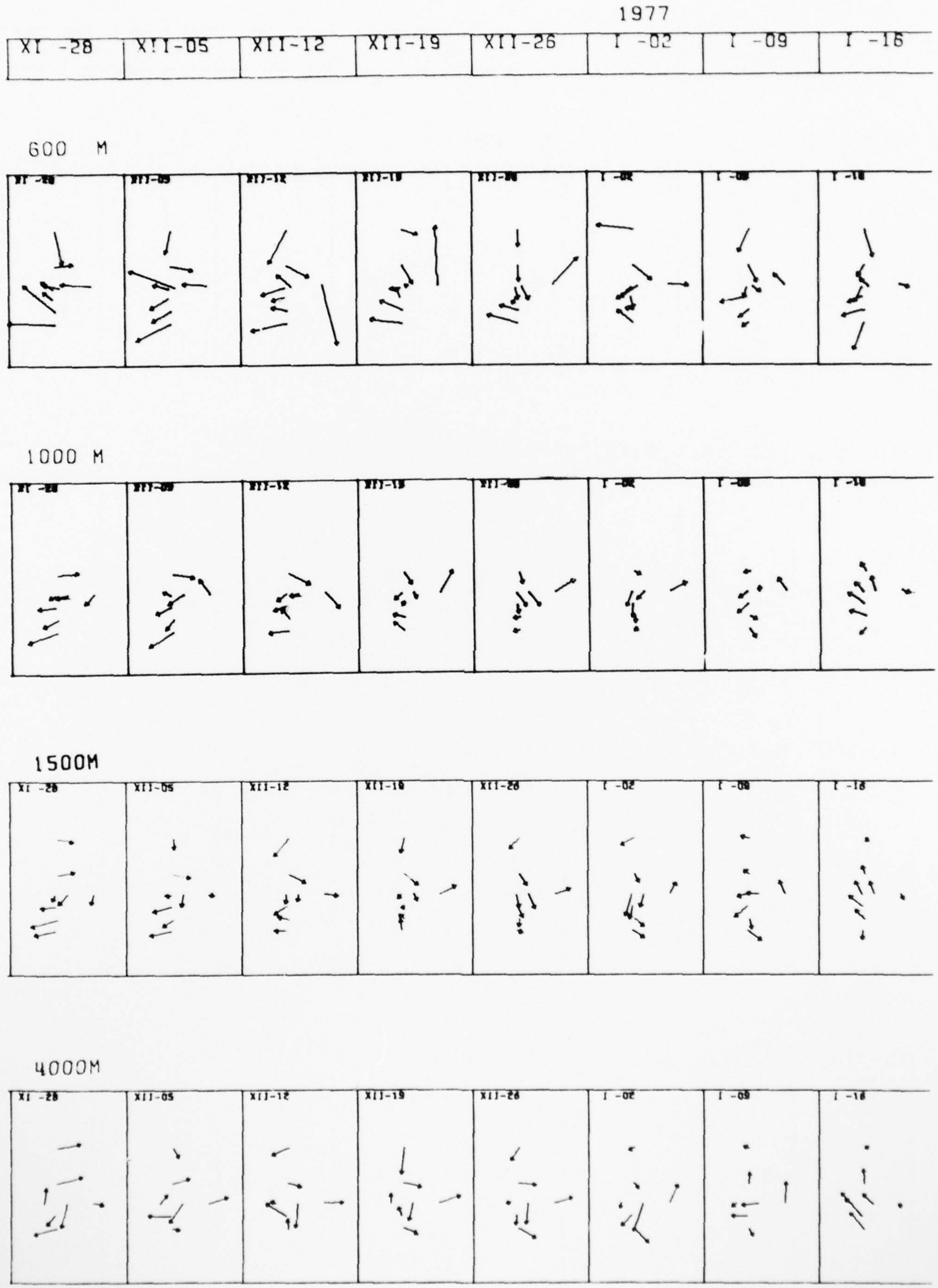


MOORINGS 1,2,3,4,5,8,13,14 AT 1500M



MOORINGS 1,2,3,4,5,8,13,14 AT 4000 M

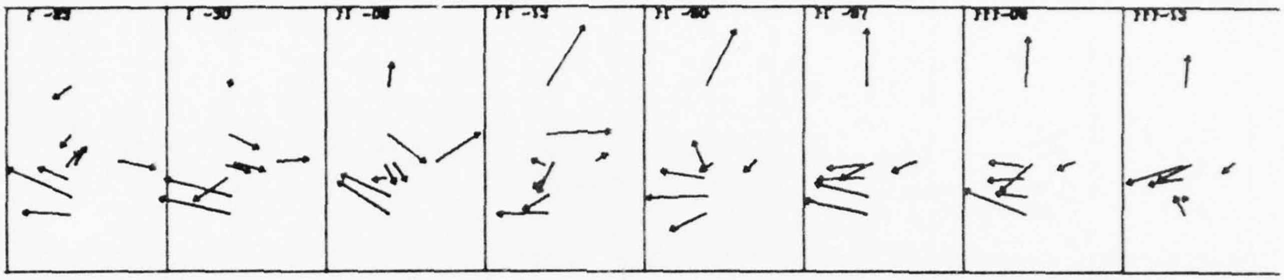



1977
XI -28
XII-05
XII-12
XII-19
XII-26
I -02
I -09
I -16
600 M
1000 M
1500M
4000M

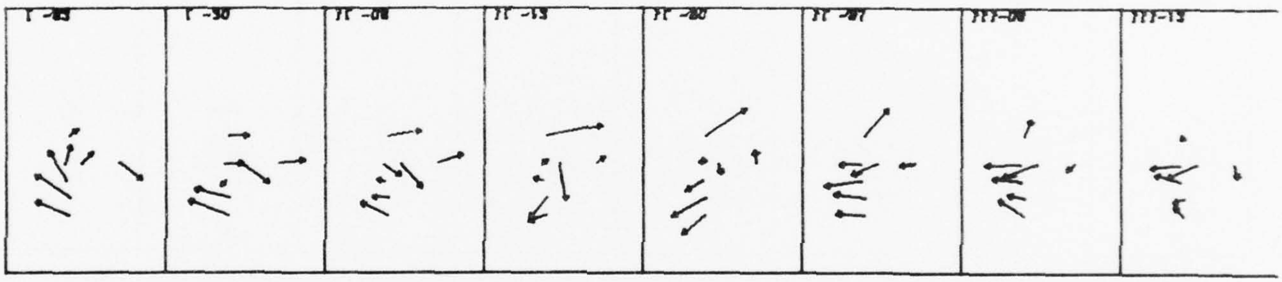
1977

I -23	I -30	II -06	II -13	II -20	II -27	III-06	III-13

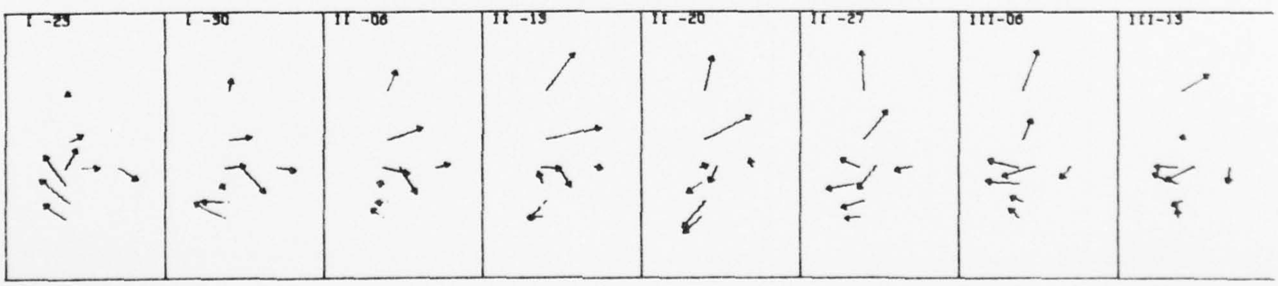
600M



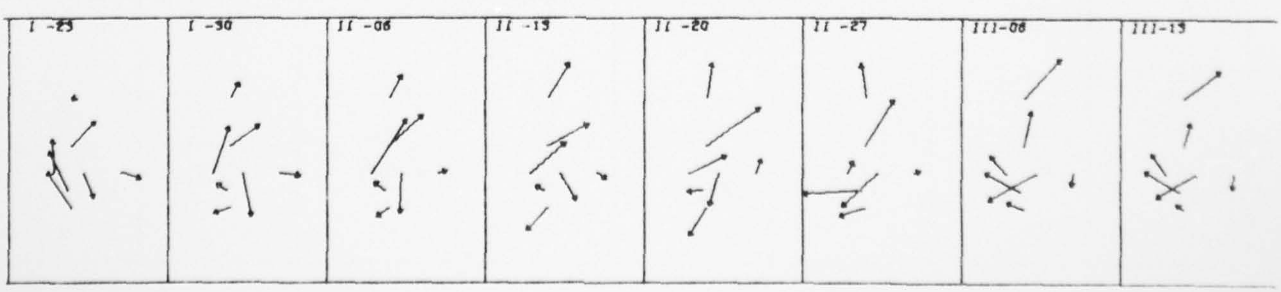
1000 M



1500M



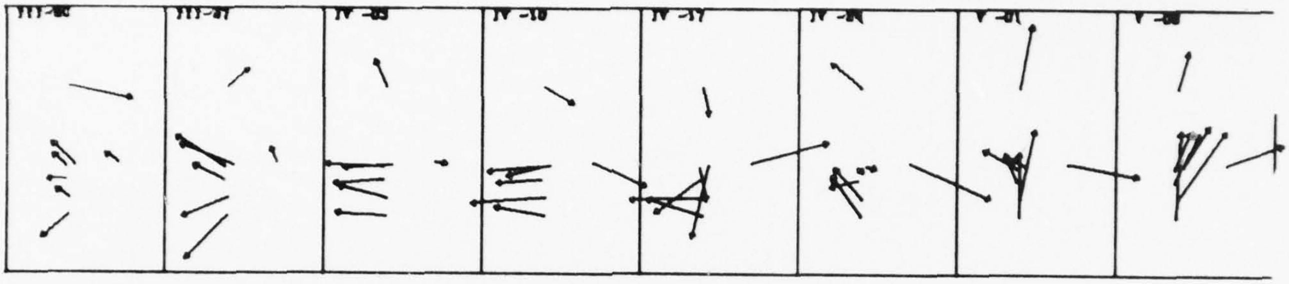
4000 M



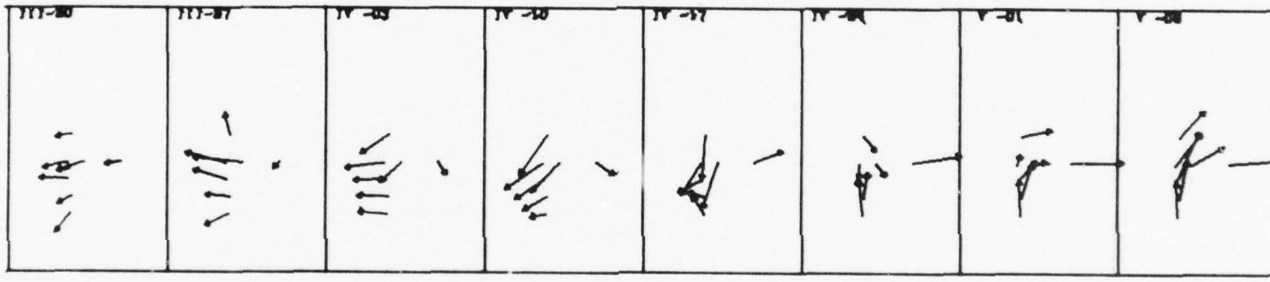
1977

III-20	III-27	IV -03	IV -10	IV -17	IV -24	V -01	V -08

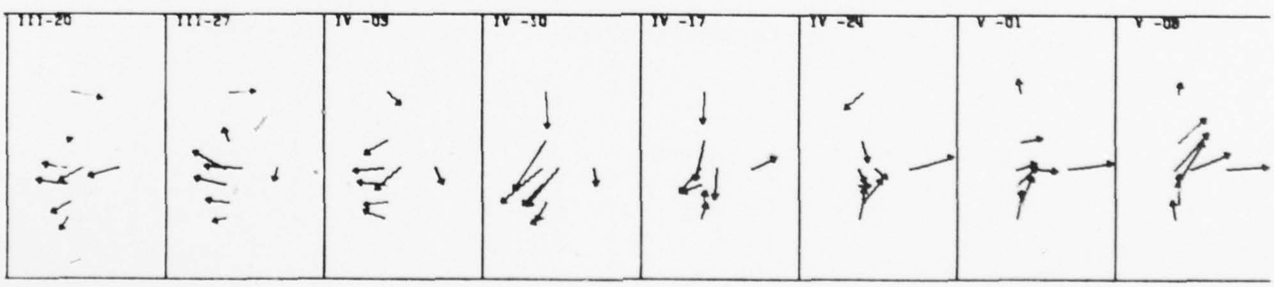
MOORINGS 1,2,3,4,5,8,13,14 AT 600 M



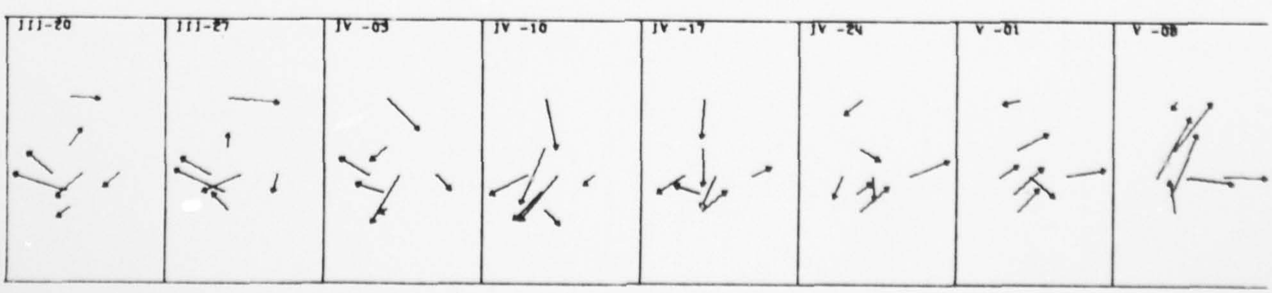
MOORINGS 1,2,3,4,5,8,13,14 AT 1000 M



MOORINGS 1,2,3,4,5,8,13,14 AT 1500M



MOORINGS 1,2,3,4,5,8,13,14 AT 4000 M



AD-A070 255 WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS F/G 8/3
A COMPILATION OF MOORED CURRENT METER DATA AND ASSOCIATIED OCEA--ETC(U)
JUL 78 S TARBELL, A SPENCER, R E PAYNE N00014-74-C-0262
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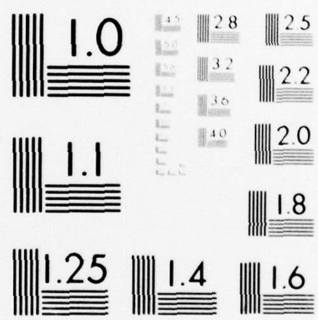
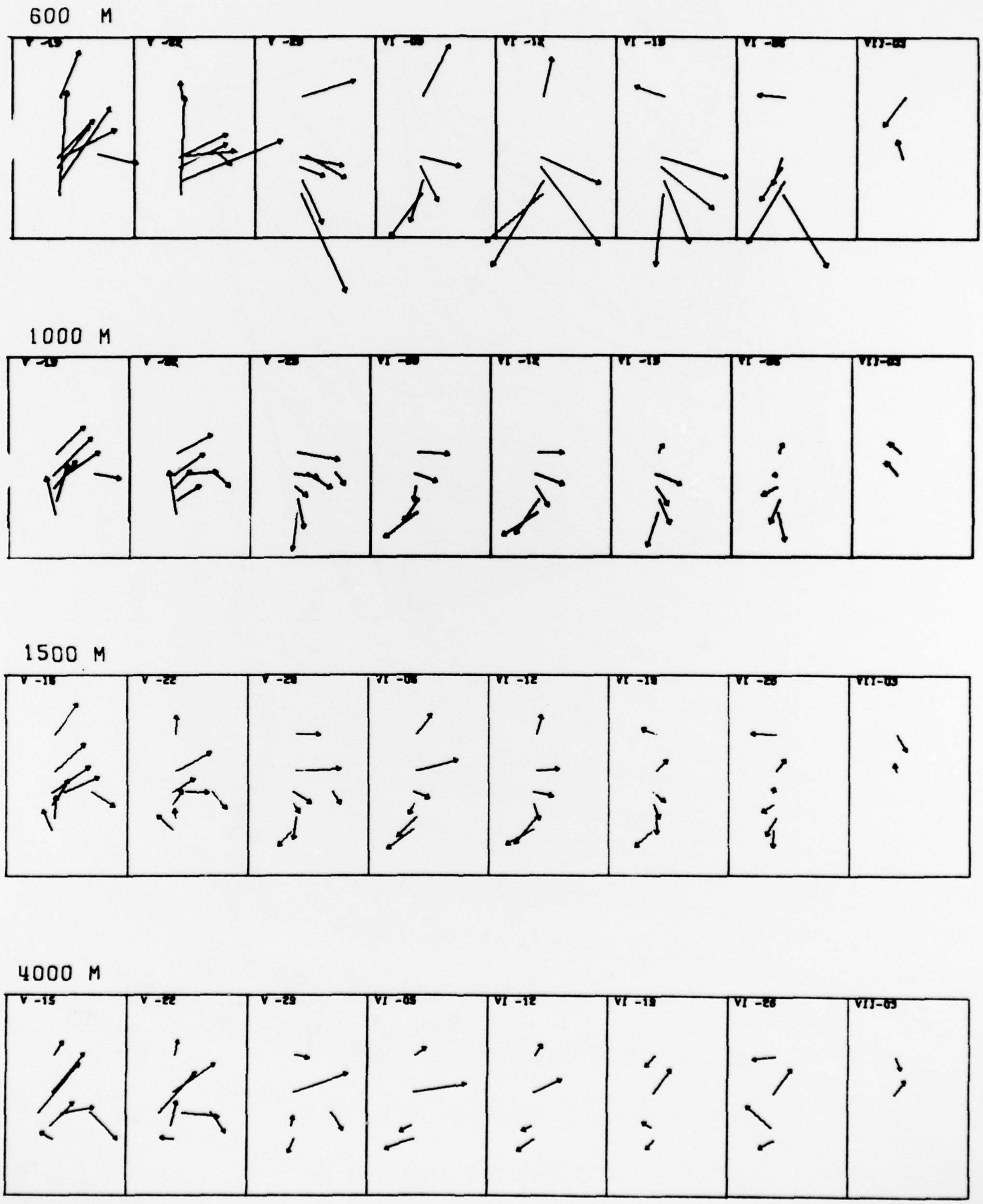
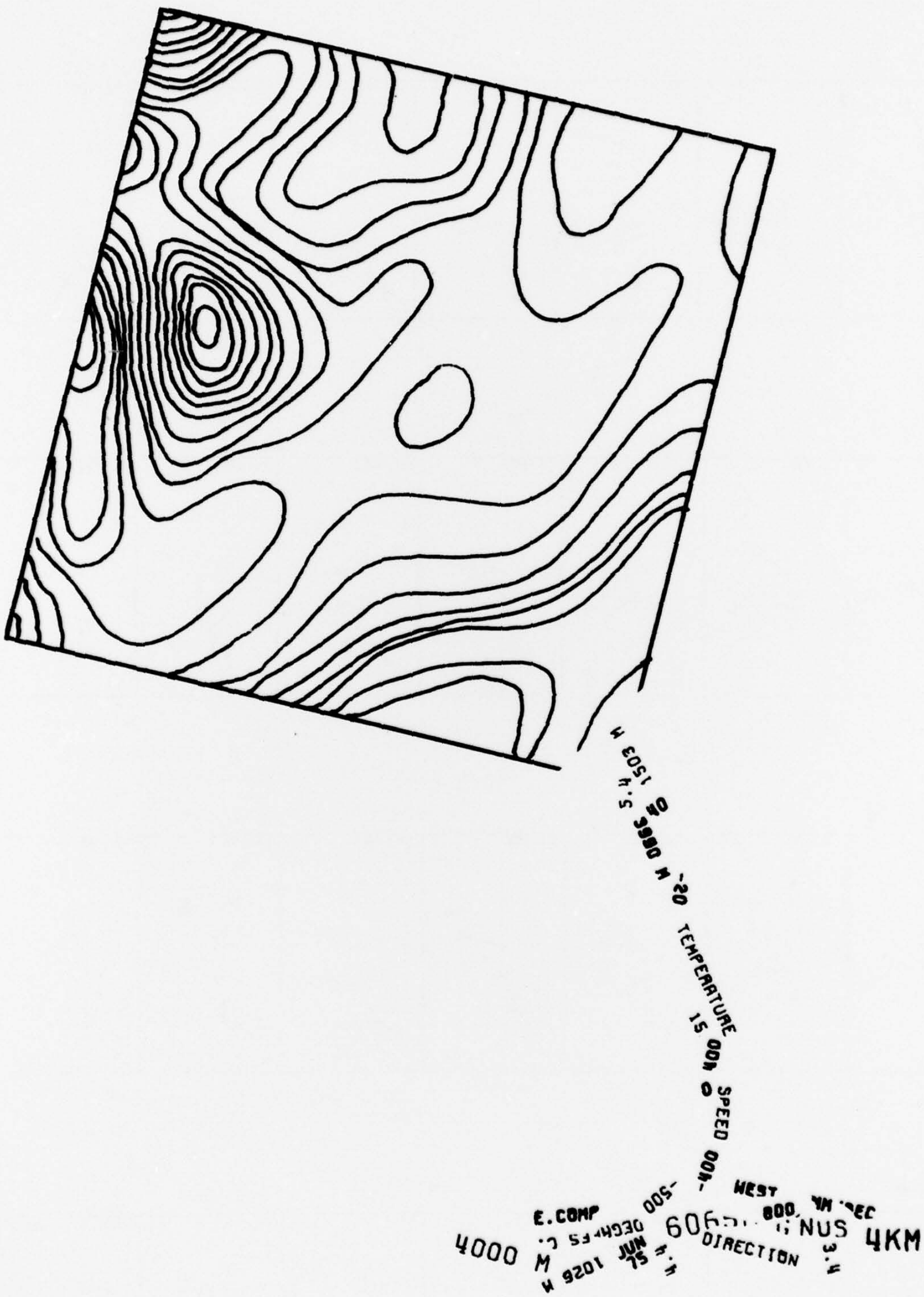


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

1977

V -15	V -22	V -29	VI -05	VI -12	VI -19	VI -26	VII-03





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A COMPILATION OF MOORED CURRENT METER DATA AND ASSOCIATED OCEANOGRAPHIC OBSERVATIONS, VOLUME XVII, (POLYMODE ARRAY II DATA) by Susan Tarbell, Ann Spencer and Richard E. Payne. July 1978. Prepared for the Office of Naval Research under Contracts N00014-74-C-0262; NR 083-004 and N00014-76-C-0197; NR 083-400 and for the National Science Foundation under Grant OCE75-03962.

Summaries of observations from moored stations and CTD profiles taken during POLYMODE Array II are presented. Data series of twenty-seven months duration at 12 locations were achieved with 3 consecutive deployments. Currents meters were set at nominal depths of 600, 1000, 1500 and 4000 meters at eight of the locations and at 4000 meters at the remainder. Nine data series of eight months duration were obtained at similar depths at 3 additional locations.

Low passed east and north current components, temperature and pressure from current meters and temperature/pressure recorders are displayed graphically and in tabular form. Spectral diagrams are plotted for temperature and the vector components when a continuous two year time series was achieved. Progressive vector plots are included for velocity data.

Selected CTD data are presented as potential temperature and salinity values plotted against pressure.

1. POLYMODE
2. Moored instruments
3. Ocean currents

I. Tarbell, Susan
II. Spencer, Ann
III. Payne, Richard E.
IV. N00014-74-C-0262; NR 083-004
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